

COMMODORE

Incorporating
Vic Computing

May 1985
Price 95p

USER



**DAM BUSTERS
EXCLUSIVE!**

C128 – FIRST REVIEW

WHICH PRINTER

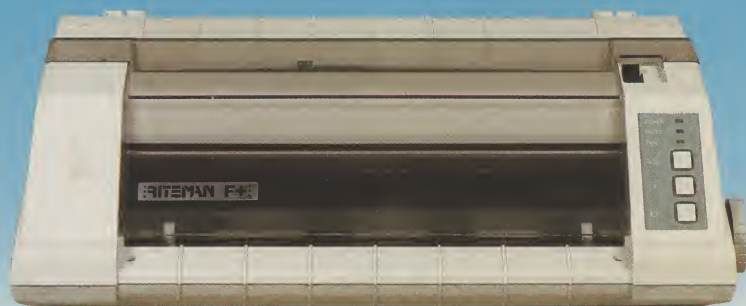
HAPPY HACKER

FOR YOUR 64?

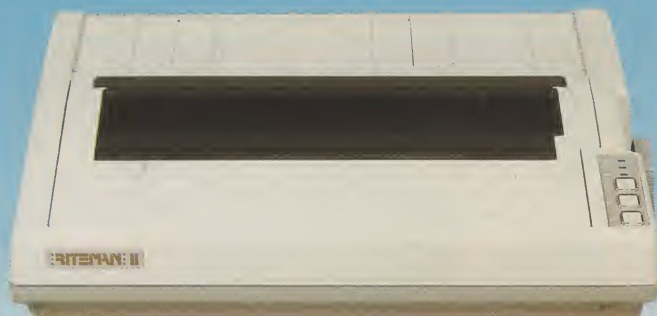
NICKED

GAMES GALORE! C64 – C16 – Vic

:RITEMAN:



Riteman F Plus with 80 column, 105 cps and Epson FX 80 compatibility



Riteman II features 80 column, 160 cps and Epson FX 80 compatibility
Riteman Blue Plus with 80 column, 140 cps and IBM® PC® compatibility



Riteman 15 with 136 column, 160 cps and Epson FX 100® compatibility



C. Itoh's **Riteman** range of printers – the **Rite** choice in low cost printers.

The Riteman range, available from C.Itoh, brings you big printer performance in units which set new standards for compact, reliable printers.

Whether you need a lightweight, full-featured or high-speed multi-mode commercial model, the Riteman range offers the print speed, quality and reliability you need.

Riteman F Plus low cost dot matrix printer with 105 cps print speed, is compatible with Epson FX 80, and with its unique paper handling and stacking system the Riteman F Plus uses the minimum of space in operation.

Riteman Blue Plus is specifically designed to complement the IBM® PC®, and is compatible with all three of the most popular modes of operation: IBM® Graphics Printer, Epson RX 80 FT®, and MX 80 FT®. You even get quad density mode for quality graphics.

Riteman II gives 160 cps performance in a unit small enough to fit in a 3 inch deep briefcase. Features include 2k buffer and expandable 8k buffer, 256 programmable character modes, proportional spacing, and Epson FX 80 compatibility.

The Riteman 15 is a 15 inch wide paper, 136 column printer which delivers 160 cps. Features include six graphics modes, 128 typestyles, and nine sets of foreign characters. The ideal business machine, it is also Epson FX 100® compatible.

All models, except Blue Plus, feature NLQ print-mode for word processing applications.

C.Itoh Electronics Co. Ltd.,
Beacon House, 26-28 Worple Road, London.
SW19 4EE. Tel: 01-946 4960. Tlx: 8955616.

IBM and PC are registered trademarks of International Business Machines. Epson RX80 FT, MX 80 FT and FX 100 are registered trademarks of Epson Corp.

RITE FIRST TIME





CONTENTS

COMMODORE USER

MAY 1985

Cover: Ivan Allen

6 NEWS

Happy Hacker arrested, Commodore PC launched plus all the latest news.

15 BEGINNERS' BASIC

We come to the end of our introduction into Basic programming with a program that'll let you keep tabs on your bank account and help you learn about logical operators.

20 PRINTERS

We round up the printers available for under £250, most of these require an interface so we check out a few of those as well.

25 SOUND AND VISION

The C16's new version of Basic offers some sounds and graphics commands previously unavailable. Ken McMahon has written two programs which illustrate its uses.

30 UTILITIES FOR ALL

Utilities are still appearing for the 64. We've gathered together some of the more recent ones, including three extended Basic packages and a couple of assemblers. There's a Spectrum simulator too.

34 COMMODORE 128

An exclusive preview of the C-128, due to be launched at the end of June. Will it be the success Commodore so dearly need?

53 MICRO-WAVE RADIO

This month's radio hams piece helps you to send morse at up to 50 words a minute, and there's more building to be done.

REGULARS

12 ADVENTURE

John Ransley has picked up a new Hobbit and he's got a few tips on it. There's news, the chart and the competition as well.

29 HAPPY HACKER

Our man on the inside (hyuk) with more news from the Micronet and Compunet networks.

41 SCREEN SCENE

Five more pages of the up-to-date reviews.

48 BUSINESS

Karl Dallas takes a look at the Micro Simplex accounts package.

61 PROGRAMS

More programs, a selection to type in for the 64, the Vic and the C16 including Dot Racer, Minefield, Alpha Aliens and a Disk Directory.

68 US MAIL

Dan Gutman mourns the demise of the computer games industry in the US.

77 TOMMY'S TIPS

More words of wisdom from our man with all the answers. Keep those queries coming.

80 LETTERS

This is where you get your say...



PEOPLE

Editor Eugene Lacey
Deputy Editor Bohdan Buciak
Staff Writer Mike Pattenden
Design/Production Lynda Skerry
Contributors Chris Durham
John Ransley Dan Gutman
Fred Reid Tom Jeffries
Advertising Manager

Julie Madigan
Advertisement Executive

Julia West
Advertisement copy control

Josephine Collins
Publisher Rita Lewis

Editorial and Advertising
01-251 6222

Subscriptions Back Issues
0732 351216

Registered Offices:
Priory Court, 30-32 Farringdon
Lane, London EC1R 3AU.

Commodore User is published twelve times a year by EMAP Business and Computer Publications Ltd. Subscriptions and Back Issues are handled by B.K.T. Subscription Services, Dowgate Works, Tonbridge, Kent TN9 2TS. Telephone: 0732 351216.

Annual subscription (UK) £12.00, (Eire) £17.00, (Europe) £18.00, (Rest of the World) £32.00.

Printed by Garrod & Lofthouse Ltd, Crawley; Photosetting and reproduction by Bow-Towning Ltd, London EC1.

Material is accepted on an 'all rights' basis unless otherwise agreed. Enclose SAE if you want the return of original manuscripts and photographs.

All material © copyright Commodore User 1985 and contributors. No part of this issue may be reproduced in any form without the prior consent in writing of the publisher, other than short excerpts quoted for the purpose of review and duly credited. The publishers do not necessarily agree with the views expressed by contributors and assume no responsibility for errors in reproduction or interpretation in the subject matter of this magazine or any results arising therefrom.

ISSN 0265-721X
1985 An EMAP Publication

SUPER

HUEY

UH-1X



SOLO FLIGHT - Computer controlled flight training teaches the techniques of flying and familiarization with instruments.

RESCUE - Your assignment is to locate and attempt pick up of stranded military personnel.

EXPLORE - Fly a survey mission over previously unexplored territory and map the terrain.

COMBAT - Use your rockets and machine guns to defend a secret desert installation from unknown hostile forces.

HELICOPTER FLIGHT SIMULATOR



COSMI

CASSETTE **£11.95** DISK **£14.95**



U.S. Gold Ltd., Unit 10, The Parkway
Industrial Centre, Heneage Street,
Birmingham B7 4LY. Tel: 021-359 3020.



NEW! MICRO CHALLENGE

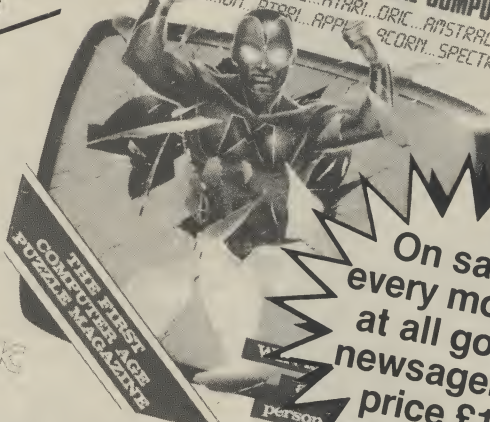
PUZZLES TO SOLVE ON YOUR HOME COMPUTER
SINCLAIR...ACORN...COMMODORE...ATARI...ORIC...AMSTRAD...MSX...
BBC...CC...IBM...ATARI...APPLE...ACORN...SPECTRUM...8



First issue
April 25

NEW! MICRO CHALLENGE

PUZZLES TO SOLVE ON YOUR HOME COMPUTER
SINCLAIR...ACORN...COMMODORE...ATARI...ORIC...AMSTRAD...MSX...
BBC...CC...IBM...ATARI...APPLE...ACORN...SPECTRUM...8



On sale
every month
at all good
newsagents,
price £1

MICRO CHALLENGE...
the first computer-age
puzzle magazine

No, not another
computing magazine.

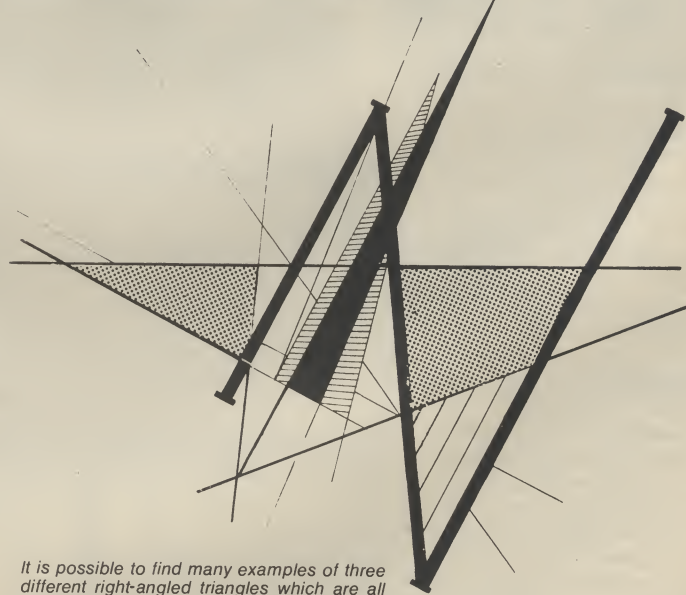
Micro Challenge is unique. Colourful and exciting,
it's packed with intriguing puzzles — and prize competitions
— devised specifically for microcomputer owners.

**WIN A
COLOUR
TV!**

This is an example of one of the many types of puzzle to be found in Micro Challenge — but it's also your chance to win a superb JVC portable colour television with remote control. Solve the problem, using skill, judgement and your own micro, then send the solution, on one of the prize puzzle entry forms from the May issue of Micro Challenge, to the address given in the magazine, marking the coupon AP1. (A proper form must be used; no photocopies or facsimiles are permitted). The competition closes first post on May 16, 1985, and the first correct entry opened wins the prize.

TRIANGLE TANGLE

Brush up on your geometry to unravel the answer.



It is possible to find many examples of three different right-angled triangles which are all equal in area. Can you, however, find three such triangles for which every side is a whole number of units (an integer)? Try to devise a program to find the trio with the smallest possible area.

WORKSPACE

TARGET TIME 25 MINS. YOUR TIME.....



COMMODORE LAUNCH PERSONAL COMPUTER

HACKER NICKED

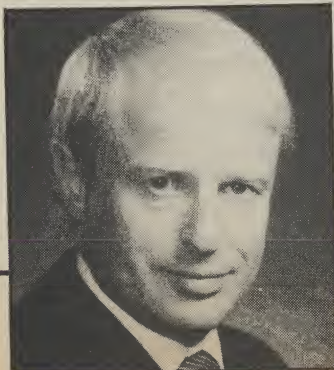
Commodore User's Happy Hacker has been arrested and charged with offences under the 1981 Forgery and Counterfeiting Act. Robert Schifreen appeared in Bow Street Magistrates Court and was remanded on unconditional bail until June 12. British Telecom, prosecuting, asked for this much time because of the wealth of technical information to be gathered together. Another man, Steven Gold, author of *Micronet's* Micromouse column, was also remanded on unconditional bail under similar charges. *Commodore User* will keep you informed of the developments of what is the first case of its kind in this country. The hacker's column will appear as normal but someone will sit in for Robert until further notice.

Shorts

New man at Commodore:

Commodore has wasted little time in finding a successor to UK general manager Howard Stanworth, who resigned last month. The new man is Nick Bessey, 36, who moves to the wilds of Corby after a twelve year stint with business computer giant IBM.

Not coincidentally, his appointment immediately followed Commodore's launch of its IBM-compatible personal computer. The cunning ploy seems to be that if you're going to try and rip the carpet from IBM's feet, you should use someone who used to stand on it.



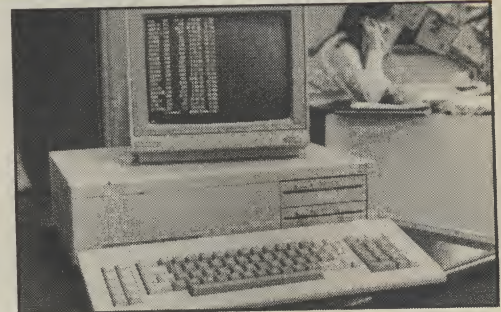
The faces of Commodore bigwigs were set in 'determination' mode for the UK launch of the new Commodore Personal Computer, the confident slogan on everyone's lips being, "the price is right", even though the time may not be quite right.

The Commodore PC is designed to compete directly with the IBM PC and the numerous PC compatibles that have virtually sewn up the lucrative business computing market. With it, Commodore clearly hopes to re-establish its flagging position in the business market now that the 8000 series (Pet) has joined the geriatric league.

So what are the PC's prices? There are two models: the **PC10**, complete with monochrome monitor, twin 360K floppy disk and 256K RAM (expandable to 640K), costs £1,675, whilst the **PC20**, the same machine but with a 10Mb Winchester and only one disk drive, costs £2,795. And that, according to Commodore, undercuts the competition by around 25 per cent — so nobody but Commodore should be laughing.

IBM Software Compatibility

The PC is the first Commodore product to offer the industry standard MS-DOS operating system, the standard Microsoft format for its disks and the much-used Intel 8088 16-bit chip. That means programs written for the IBM PC will run without problems on the Commodore machine, thereby opening up a wealth of software. Already, Commodore's software catalogue includes business best-sellers like Lotus 1-2-3, Symphony, Framework, WordStar, Supercalcs 1, 2 and 3,

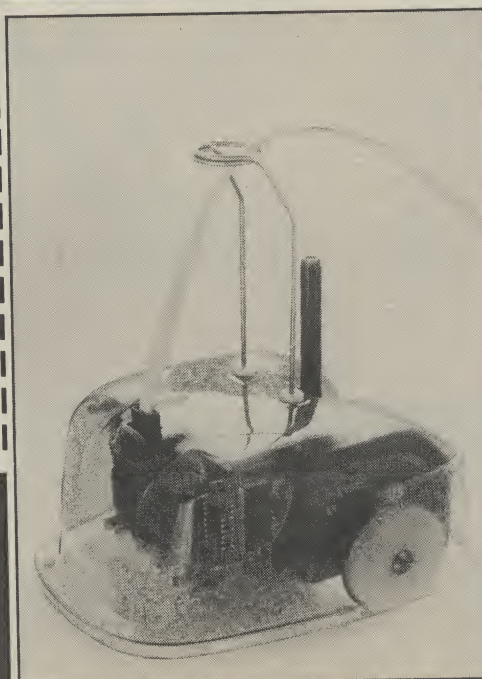


dBase 11 and 111, Delta — and many more.

So Commodore has done its homework, realising that to compete in this market the goods have to be cheap for the customer and sufficiently attractive for distributors and dealers to stock. Apparently, five major distributors are already taking machines and sales are expected to reach 6,000 per month over the next three month period in Europe. The PC will also sell in USA and Canada. Incentives for buyers and dealers include an optional three-year warranty (not free), leasing and finance arrangements, and a network of Regional Service Centres.

There's no doubt, the PC's prices look good, especially for the entry-level model, but whether it will grab a slice from IBM and from compatible makers like Compaq, Olivetti and Japan Inc., remains to be seen. Given the amount of money it's spending, Commodore certainly seems convinced, regarding the PC as only the start of a business venture that should see the appearance a Unix-based Z8000 machine by the end of this year.

ROBOT INVASION



A London based firm has announced a Commodore compatible robot for under £100. **Zero 2**, made by the ambitiously named *Intergalactic Robots Ltd*, connects to the 64 via a standard 'D' type connector and sells for £99.95 assembled, and £79.95 as a kit.

The robot is a small buggy or turtle type device equipped with wheels, pen, lights, line follower and a two-tone horn. It is connected to the computer with a 4mm telephone type cable and is flexible as regards language.

Intergalactic Robots claim a high degree of manoeuvrability for the device with turning motions to accuracies of 0.1mm, or one degree. A spokesman said that it was already selling well in many Scottish schools and hoped that it would soon be installed in most English ones as well.

Whilst Zero 2's main application is educational, Intergalactic hopes it will be of use in the home, and claims it is capable of watering plants whilst you're on holiday, playing with the baby or the cat (let's hope it knows which is which!) or even as a dress-making aid, transposing dress patterns to size. Games applications are also intended. Contact Intergalactic Robots on 01-359 2536.

EARLY SUPPORT FOR 128

Chastening experience with machines like the Sinclair QL has alerted the computer industry to the truism that you stand little chance of selling your latest wonder-micro unless a modicum of software is available at launch time. Commodore has taken this lesson to heart with its C-128.

Many weeks before its launch, software producers like Audiogenic, Precision and Thorn EMI have announced that they're working on C-128 products. Trouble is, there's nothing really exciting on offer, most of the products being conversions of business programs.

Audiogenic, for example, sent one of its boffins to Commodore's Slough offices to convert the Micro Swift spreadsheet, originally for the Commodore 64, to take advantage of the 128's 80-column display. Its maximum number of rows has also been increased to 999. No prices yet but, considering that the 64 version costs a mere £19.95, it

shouldn't bust your pocket. According to Audiogenic's Henry Smith, Audiogenic's other business products will soon get the same treatment. Similar 80-column conversions of Easy Script and Superbase are also due from Precision Software.

Thorn EMI has announced that it's converted the American 'Perfect' series of business software, which also runs on the IBM PC, to run on the 128's Z80 processor under CP/M. The series, comprising Perfect Writer, Perfect Calc and Perfect Filer, is fully integrated, allowing the sharing of data between programs, and featuring the latest of split-screen windows and pop-up menus. No prices yet, though.

From Commodore itself, there should be a series of disk-based games (including adventures) that include versions for both the 64 and 128. According to Commodore's Gail Wellington, it should help to cut costs and provide cheaper software.

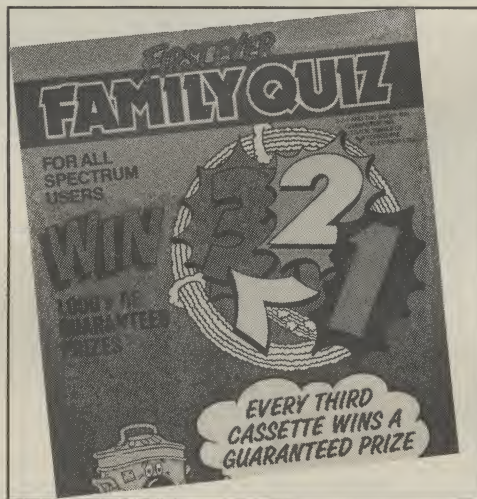
IN THE BIN

I'm at a press launch and someone at the far end of the room is making bad jokes and nobody's laughing. Seems there's a new quiz game for the 64. Wait a minute, if the jokes are bad, and it's a quiz and the joker is Ted Rogers, it must be (fingers fumble) 3-2-1!

Yes folks, Dusty Bin has come to the home computer market. The game, published by Micro Computer Incorporated, gives you the chance to win lots of prizes just like the real thing.

The star prize is nothing less than a week's holiday in Spain. There's lots of other goodies as well, including colour TVs, bicycles, peripherals and cuddly toys — sorry wrong game, no cuddly toys. To win you have to complete the game, download your score and send it back to the company. It's supposedly secure, which is like waving a red flag to all those hackers.

The other original feature of the game is that you won't see any advertisements in the press for it. Its campaign is based totally on television advertising, and, like those duff



records, available by mail order only, at a cost of £9.95. There's a review coming next month, so start swotting up on your general knowledge.

OF MICE AND TRACKER BALLS

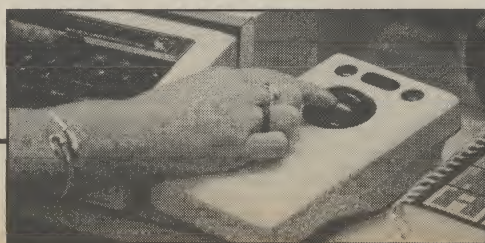


The SMC Mouse is now available from Barnet-based SMC Supplies. Designed for the Commodore 64, it plugs into one of the joystick ports.

At £59.95 it's somewhat pricey, but includes graphic software that offers the usual drawing features, plus a sprite and graphic designer, and a screen-dump utility to a Centronics printer. Running your rodent across a flat surface produces corresponding move-

ment with the on-screen cursor.

Meanwhile, Central Trade Exchange has launched the Marconi RB2 Tracker Ball, also for the Commodore 64. The on-screen cursor is controlled by fingertip operation of the central ball. Like the SMC Mouse, the RB2 includes sophisticated graphics software and, at £59.95, is identical in price. It also includes software that lets you use the device in your own programs. More details from SMC on 01-441 1282 and from Central Trade Exchange, 0582 64334.



Shorts

Evil for the C-16:

Remember the *Tower of Evil* game for the Vic-20, you know, the one in which you rescue the fair Princess Diana from the Necromancer? Creative Sparks has now released a "greatly enhanced" version for the C-16. Costing £5.95, CS rashly claims it's "easily the best game written so far for the C-16". Hm — we'll be reviewing it soon.

Shorts

Wordprocessing taped:

Audiogenic's stalwart *Micro Wordcraft* program is now available on tape, complete with Novaload, for all those 64 owners who need a professional-quality WP package but can't afford a disk drive. The package retails at £24.95 and should be available at branches of Smiths, Boots and Laskys.

Shorts

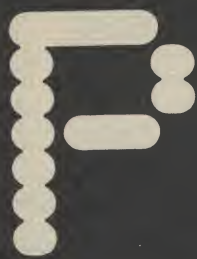
Alphacom goes cheap:

Dean Electronics, UK distributors of the Alphacom range of printers has announced drastic price cuts as part of a special offer. The Alphacom-42's price is slashed from £99.95 to £49.95. And the Alphacom-81 is dealt with just as ruthlessly, cut from £139.95 to £79.95. Both printers feature a unique slot-in Commodore compatible interface which lets you reproduce the complete Commodore graphics set. You'll find more details in the printer/interface article in this issue.

Shorts

Cheap thrills for Vic:

There may be hope for dedicated Vic owners, since a new software house, *Atlantis*, is offering two Vic games at £1.99 each. Before you get too excited, both offerings look to be old and mouldy. There's *Super Breakout* (something to do with knocking a ball against a wall?) for the unexpanded machine and *Death Race*, a car racing game for the Vic with 8K expansion. For the price of a Big Mac and fries, they're probably worth a spin. More details on 01-226 6703.



PROFILE: "WILD BILL" STEALEY

This month Eugene Lacey faces the flak from American flight program ace Wild Bill Stealey, a man with an ego that matches the quality of his flight simulation programs for Microprose: Solo Flight and F 15 Strike Eagle.

A couple of minutes in Wild Bill Stealey's company is enough to stop you wondering how he earned that nickname.

"See that," he bawled, tapping the largest ring I've ever seen on my desk, waking up the technical experts in the Commodore User offices, "that's a genuine American Airforce Fighter Pilot's Ring. Do that in a bar room in the States and you get instant service . . . they know you're a fighter pilot."

Wild Bill lives in Hunt Valley, Maryland, with his wife and their three children. Despite his impressive USAF background he will be best known to most Commodore users as the author of *Solo Flight* — America's best selling flight simulation for the 64.

The success of *Solo Flight* prompted Stealey's company to launch a flight simulation closer to Wild Bill's heart — *F15 Strike Eagle*. This is based on one of the most advanced fighters currently in service with several air forces around the world.

Stealey has so much confidence in Microprose that he could easily persuade you that they were the only software house in the world. It's only when you pinch yourself a couple of hours later that you remember there are some other good companies in the US: Epyx, Activision, Access to name only three.

The main thrust of the Wild Bill sales talk is reserved for F15 — clearly his favourite simulation. As far as Stealey is concerned the only real pilots are fighter pilots. What about airline pilots, I ask? "Bus drivers", says Wild Bill. Alright then — what about the pilots who talk endlessly about the freedom, the solitude and the spiritual experience of flying?

"You wanna talk spiritual? I'll tell you what's spiritual . . . flying upside down in an F15, doing Mach 1.5 high above the Rocky Mountains, with the sun behind and the Pacific Ocean ahead of you . . . that's spiritual . . . the rest is just sight-seeing."

"Whooosh", says Wild Bill, thrusting his hand through the air to illustrate the point.

Like most good American software houses, Microprose launches less products per year than its UK counterparts and takes longer developing them. "We offer quality software and quality software takes time to develop — in the case of *Solo Flight* about nine months, and *F15*, a year."

Microprose develop all their programs in teams. Stealey is chief



Wild Bill Stealey grounded in the Commodore User office

designer and ideas man, Sid Mayer is the programming brains. A Washington lawyer writes the manuals.

It's important to get a legal brain in on the documentation of Microprose simulations. Particularly when they are about USAF planes like the F15, as these have to be cleared with the authorities before they can be put on sale. "All the information in the software and in manuals that are sold with them needs to be non-classified . . . I am very particular about that," says Wild Bill, assuming a very serious tone of voice. This would of been fine if he had not let it slip that the Russian Embassy in Washington still bought four copies of the game the day after it went on sale.

But if the Russians can find out anything useful about the F15 it probably won't be of much use to them learning about Microprose's other flight simulation — *Spitfire Ace*.

"It's probably the most romantic fighter that has ever been", says Stealey, "the idea to do the game came from England, and we are very pleased that we did it."

Microprose's *Spitfire* game has now been challenged in the shops by

Mirrorsoft's *Spitfire 140* — and a comparison is published in this month's Screen Scene. Comparisons are something that Wild Bill is very keen on and he has done one himself between *F15 Strike Eagle* and Digital Integration's *Fighter Pilot*. Needless to say the Microprose game comes out on top. According to Stealey's calculations — fifteen authentic F15 details to three in Digital's game.

But if flight simulations have been the mainstays of the Microprose range for the last year they certainly won't be the only products launched by Stealey's team this year. Other hot titles to look out for are *Solo Flight II* — with lots of new features, *Kennedy Airport Approach* — an air traffic control game with some of the best speech I have ever heard on any game including *Impossible Mission*, and two new war-strategy games with historic World War II themes.

To describe Wild Bill Stealey as a brash American has got to be the understatement of the century. But love him or loath him you can't help thinking that with this guy in the cockpit, Microprose are going to be piloted to a successful future.




Spitfire

40

CHOCKS AWAY!

THE BEST THING SINCE THE REAL THING

A Spitfire flight simulation set in 1940. Ground features and realistic air combat.

Spitfire⁴⁰ is available from W H Smith , Boots , Spectrum  and good software stores everywhere.

MIRRORSOFT

MIRRORSOFT, Mirror Group Newspapers Ltd



Holborn Circus, London EC1P 1DQ Tel: 01-822 3580

A VERY SPECIAL COMPETITION

Target: To rise through the ranks of the RAF elite to Group Captain, VC, DSO, DFC

Reward: For the lucky few, a day out at the Battle of Britain Museum plus a test flight in a high performance aircraft. Details in every **Spitfire⁴⁰** pack

COMMODORE 64 (JOYSTICK ONLY)
DISK £12.95/CASSETTE £9.95

Now you can use your Commodore 64 to write a letter or a report, to compile a mailing list or classify your record collection, to check your bank statement or sort out your family finances (and then translate them into colourful graphics) . . . all for just £5.95.

Quick to learn, easy to use, that's..

MINI OFFICE marks a long-awaited breakthrough in dramatically reducing the cost of personal computing.

For the first time it makes available to everyone an easy-to-operate version of four of the most popular business computing applications – and at a price anyone can afford.

Never before has a word processor been sold for anything as low as £5.95. Nor a database manager. Nor a spreadsheet. Nor a graphics program.

Yet Mini Office contains them all.

So how was it done?

It all started with a suggestion that we should prepare a package to give readers a gentle introduction to the kind of software that businesses were running on their computers.

At that stage there was no intention that it should be an ambitious package. Just a simple program that could be sold at a very low price.

We called in experts in

processing, database management, spreadsheets and graphics had been turned into a full scale suite of programs covering all four applications.

In fact the only part of the brief that remained was our original insistence that the package should be quick to learn and easy to use.

And despite all the extra sophistication that has been written into it, we decided that, as a service to our readers, the price should still be kept at the very low figure originally fixed.

How does Mini Office operate?

Using the **Word Processor** is simplicity itself. There are none of the cryptic coded instructions that had to be mastered by people learning the early word processors.

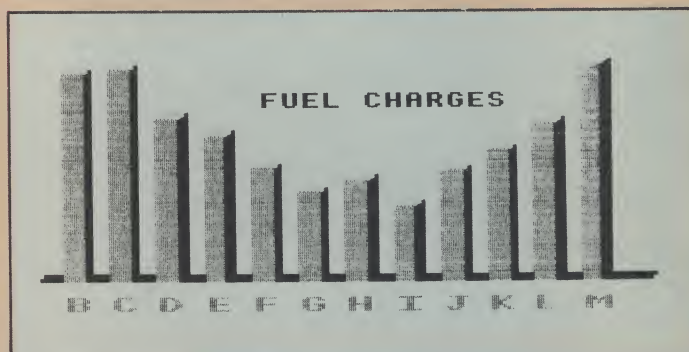
You start by selecting the size of type you prefer – either normal or double-size. The latter is a feature that you

people this could be the first time they can send out a perfectly typed letter without outside help.

Primary school teachers are also expected to make great

it again. It can also be printed out.

The **Database** program can be used to store a mass of information. It can be retrieved, in its entirety or just



Figures on the spreadsheet can produce a bar chart . . .

use of the double-size function, both on the screen and on hard copy printouts.

While you are using the word processor three useful pieces of information are displayed across the top of the screen.

They tell you how much time has elapsed since you started using it, the number of words you have written so far, and how many characters you can key in before the computer's memory is full.

At any time you can press a key which tells you your typing speed. This is a most useful function, and can play an important part in increasing your efficiency at the keyboard.

You can also decide the size of the margin, the line length and the tab positions. Text can be moved from one part of the document to another.

At any time you can preview the text to see how it would look when printed out.

As with all the other programs in Mini Office, your work can easily be saved and loaded when you want to use

the parts you require for a particular purpose, whenever you need it.

The operation is so simple that a useful database can be created in minutes rather than days – and you certainly don't need any computer experience to set it up.

The powerful search facility is very easy to use. You can search for a particular word or words or you can order a numeric search – such as telling the computer to find all the numbers greater or less than the one you provide.

You can carry out multiple sorts. For instance, if you have built up a mailing list containing a list of names, addresses, telephone numbers, occupations and ages you can ask the database to provide you with a list of teachers living in Liverpool whose ages range from 25 to 30.

One powerful option allows you to replace anything on the database without having to go through the whole lot making amendments yourself. You could, for instance, instruct it

A unique feature is the double size text option in both printer and edit mode – perfect for young children and people with poor vision.

The word processor – with double size characters

business software programming, told them what we wanted and sat back to await results.

What happened next was totally unexpected. For they all came back with ideas that were to considerably expand our original brief.

In the end what had been planned as little more than a beginners' guide to word

cannot find on any other word processor.

It is particularly suitable for the partially sighted – in many cases giving them their very first opportunity to use a word processor.

This means they can use a micro to compose a letter, using the double-size mode, and then print it out using normal size type. For many

Now on the
Commodore 64



DATABASE SOFTWARE

to find each reference to "teacher" and replace it with "lecturer".

The **Spreadsheet** is our version of the program that marked a milestone in business computing—Visicalc.

It is often pointed out that this one program alone has helped to sell more personal computers than any other.

Certainly Visicalc and its derivatives have never been shaken from their position at the top of the list of best-selling business programs.

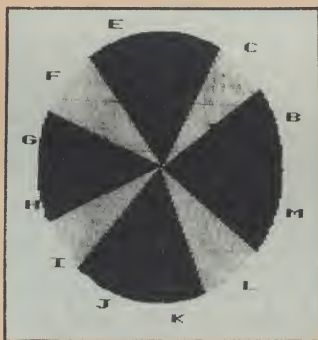
Yet the concept is very simple — a giant worksheet of rows and columns, only part of which can be seen on your screen at any one time. Into any position on the sheet you can put numbers, labels and mathematical formula.

And when you alter any figure its effect ripples through the rest of the sheet, changing any totals as may be necessary.

The Mini Office version is ideal for home finance, provid-

ing you with an effortless means of keeping tabs on your income and expenditure — and enabling you to work out your own budget.

In our Spreadsheet program — as well as in the Database — we have provided



... or a pie chart

a sample file so that you can experiment with it before entering your own data.

One feature we have included which to our knowledge does not exist in any other spreadsheet is a warning device to prevent you

accidentally erasing formula — a very useful precaution.

The **Graphics** program uses the standard business graphics — line, bar and pie charts — in full colour. Which is something not always available on far more expensive graphics packages.

The program uses data you have already prepared on the spreadsheet. You have to identify which set of information you require to see in graph form — such as by indicating which row or column — and then which of the graphs you require.

The graph is then automatically configured exactly as you require it. If you have suitable printer capable of

producing graphics you can also print out hard copies for a permanent record.

Because our original intention was to produce a package for people new to all these applications, we have produced a fully-detailed, easy to understand manual.

This 32 page free booklet gives clear instructions about how to use all four programs and in itself forms a concise introduction for first-time users.

If you want to start doing more with your micro than just playing games, this package is your ideal introduction to the four most popular applications for professional computers.

● Graphics illustrated here are from the Amstrad version and are slightly different on the Commodore version.

Cat. ☐ Please send me copy/copies of 9002 Mini Office for Commodore 64

Payment: please indicate method (✓)

☐ Access/Mastercard/Eurocard

Card No. _____

☐ Barclaycard/Visa

Card No. _____

☐ Cheque/PO made payable to Database Publications Ltd. ORDER BY PHONE

Name _____ Signed _____

Address _____

**ONLY
£5.95**

YOU CAN ALSO

Orders (24 hours)
061-480 0173

All other enquiries
061-480 0171

Send for it today

Also available from Comet, Currys, Dixons, Greens, John Menzies, Rumbelows, Boots, W.H. Smiths, Laskey's and other computer stores.

Send to: Database Software, FREEPOST, Europa House,
68 Chester Road, Hazel Grove, Stockport SK7 5NY.
(No stamp needed if posted in UK) Please allow 28 days for delivery

CUS



ADVENTURE



Breaking the Hobbit

I have a confession to make. I've never conquered **The Hobbit**. To be absolutely truthful, I've never really explored that deep into the adventure which has, over the past couple of years, sold in the region of one-quarter of a million copies.

This may be a kind of inverted snobbery on my part — but I put it down to a desire not to grow old at my keyboard. For a start, the early versions of the game didn't have a fast loader — though the ones now on sale do. Secondly, the graphics — brilliantly innovative when Bilbo and his friends shone through the video tube at us — now seem a little unsophisticated (and desperately slow) by

comparison with second generation graphic titles such as *Eureka!* and *The Lords of Midnight*.

Hobbit on disk

But now, thanks to the decision by Melbourne House to

This month John Ransley becomes a convert to the spectacularly good new disk version of *The Hobbit* and hands out a few tips on the game, as well as a routine that will put random responses into an adventure program. There's some more American titles previewed plus news, a competition and the readers' chart. **By John Ransley**

● COMPETITION ●

Not only did Napoleon Bonaparte fight great battles but he also knocked up a terrific brandy. Trouble is, Josephine wasn't the only person he couldn't keep happy, and he died six years after his defeat at Waterloo in 1815.

But where exactly did he die? Was it in exile in Elba, imprisoned on St Helena, or in exile in England? Choose the right answer and you could win this month's double prize of Quicksilver's two newest animated adventures from the States — **Dungeons of Ba** and **Castle of Jasoom**. So just write your answer on the coupon below, add your name and address and the titles of your three current favourite adventures (you don't have to enter the competition to vote) — then mail it right away to the address shown at the bottom.

NAPOLEON'S PLACE OF DEATH WAS

Name

Address

My three favourite adventures are:

1.....

2.....

3.....

Send your entry to Napoleon Competition, Commodore User, 30-32 Farringdon Lane, London EC1R 3AU.



Meet Condor — star of Activision's first adventure — see page 14.

go for the huge disk-oriented 64 market in the States, all that has changed — and I swear to Gollum that I've never enjoyed myself more in the first hour of exploring a new adventure.

The *Hobbit* on disk hasn't just had a facelift — it's undergone major surgery. The number of locations has doubled, and the core program now loads in just a couple of minutes. Then you flip the disk to access the graphics files, so that as you progress through the game, a new illustration is read from the disk and zips into memory in just a few moments. And what a splendid library of graphics it is; the detailed and richly-coloured screens add a totally new dimension of appeal and come very much nearer to the quality that a Tolkien-inspired fantasy surely deserves.



The old and the new. Top shows the old opening screen of the *Hobbit* and below the new souped-up disk version.

1	The Hobbit (Melbourne House)
2	Castle of Terror (Melbourne House)
3	Eureka! (Domark)
4	Sherlock (Melbourne House)
5	Zork III (Commodore/Infocom)
6	Return to Eden (Level 9)
7	Colossal Adventure (Level 9)
8	Twin Kingdom Valley (Bug-Byte)
9	Snowball (Level 9)
10	Spiderman (Adventure International)

A particularly pleasing feature of The Hobbit — and it's a pleasure doubled in this new version — is the number of locations it's possible to explore without being blocked by some seemingly insurmountable puzzle too early on (with the exception of those trolls — about which, more later). Me, I usually surrender at the first threat of any intellectual confrontation — but The Hobbit on disk allowed me to explore one imaginatively illustrated location after another.

Of course I could have delved deeper into any of them and stopped to chat with Gandalf or Elrond — and then I would have begun appreciating, too, the real brilliance of Philip Mitchell's full-sentence interpreter. But for this first taster, there was fun enough to be had in just exploring the game's visual delights — as well as enjoying the very listenable music score that is another welcome special feature of this new version.

At £17.95, The Hobbit on disk, it's true, is only £3 more than its now inferior counterpart on tape. I guess the thinking is that if you can afford a disk drive, you can afford pricier games. I wonder about that. I would have liked to have seen this stunning new version sold a couple of pounds cheaper, together with a long-overdue cut in the price of the tape version. Not because I dispute for a moment that it's worth every penny of the price that's asked, it's just that something this good should have the chance of reaching the widest-possible audience — and in the UK at the moment, that audience is very price-conscious.

Handy tips

Skip this item if you mean to play The Hobbit and don't want an easy start. I don't usually give playing tips in this column but the wretched trolls soon met in The Hobbit can be very discouraging and may deny you an early opportunity to explore lots of interesting locations. Here's how to defeat them. After you've left the tunnel hall, go east and east again — and you'll arrive in the trolls' clearing. The mistake is to stand

your ground. Instead, go north and wait, wait and wait again by the stone door until dawn breaks. Then return south to the clearing and you'll find the trolls have turned to stone.

Good response

Readers' letters suggest that I'm not the only one who can't abide adventures which don't incorporate just a little personality in their 'puppets'. *Valkyrie 17* is a good example of a recent title that doesn't fall into that trap; enter a silly or illegal command and you'll get any one of several random responses rather than the same old "You can't do that" every time. It's an effective bit of gloss on what is anyway an above average adventure — and one you can easily incorporate in your own Basic pro-

grams using a simple routine such as this:

```
100 INPUT "WHAT
NEXT";R$
110 :
120 REM USUAL IF . . .
THEN TESTS GO HERE
130 REM BUT IF INPUT IS
UNACCEPTABLE . . .
140 :
150 GOSUB 500:GOTO 100
500 X=INT(RND(1)*3) + 1
510 ON X GOTO 520, 530,
540
520 PRINT "THAT'S JUST
NOT POSSIBLE" : RETURN
530 PRINT "SORRY — YOU
CAN'T DO THAT HERE" :
RETURN
540 PRINT "YOU'VE GOT
TO BE CRAZY!" : RETURN
```

Customised responses can also add elegance when, for example, players find themselves arriving at a location they've visited before. In even the best commercial adventures you'll find, very often,

that the program will treat the returning visitor like a complete stranger. This bug can be easily overcome with another short routine:

```
100 R$(1)="INFORMS":
R$(2)="REMINDS":
R$(3)="AGAIN REMINDS"
110 X=1
120 PRINT "[CLR SCREEN]"
130 INPUT "WHERE
NOW"; R$
140 IF R$="N" THEN 500
150 GOTO 130
500 PRINT "YOU FIND
YOURSELF IN THE"
510 PRINT "TOWER OF
ALCHEMY."
520 PRINT "THE
ALCHEMIST" R$(X) "YOU
THAT"
530 PRINT "SOME MAGIC
POTIONS ARE HIDDEN
HERE."
540 X=X+1: IF X>3 THEN
X=2
550 GOTO 130
```

You'll find, of course, that the routine starting at line 500 will only be called if you enter N and hit Return. But no matter how often you travel S, E or W in between, you'll get a different response the first three times you venture N — and on subsequent visits the response will toggle between messages R\$(2) and R\$(3).

American dream

In the good old days before the £1 dollar I would occasionally treat myself to one or two of the better American

● ADVENTURE NEWS ● ADVENTURE NEWS ● AD

● **Spectacular graphics:** icons, and keyboard, joystick or even lightpen response are among the advanced features of *Shadowfire* — a new-style adventure from Beyond, whose 64 version of Mike Singleton's classic *Lords of Midnight* is already a firm fixture in our Top 10. An advance copy arrived in the Valley as this column went to press — look out for much more about this exciting new title, including exclusive screen shots, in next month's issue.

● **After the critical success** of Erik the Viking, Level 9 are working with Mosaic on an adventure based on Sue Townsend's million selling *Adrian Mole* titles, to tie in with a new Thames TV series planned for the autumn.

● **The Quill** gets better and better with the news from Gilsoft that a 64 version of *The Illustrator* add-on, which creates full-colour graphics easily and then allows these to be incorporated into Quill-generated

adventures, will be ready late summer, priced around £14.95. Also, all the titles in their Gold collection of text adventures are now selling at only £1.99.

● **Trevor Hall**, author of the enduringly popular *Twin Kingdom Valley* is putting the finishing touches to his latest graphic adventure which Bug Byte plan to release in the autumn.

● **Dorling Kindersley's** new *Screen Shot* title for the 64, out mid-May, will be devoted to creating the kind of hires graphics that could make your adventure a commercial hit. And the Edwardians' answer to Arthur Daley turns up in *Raffles*, a graphic adventure Dorling Kindersley have set for a September launch.

● **Adventures that talk back** feature in the list of a dozen new titles from Step One Software, priced from £9.95 to £14.95 on tape or disk. Phone 0727 40145 for details.



ADVENTURE

micro mags and drool over the ads for the latest adventure titles being launched there. It seems to have taken longer than it should to bring some of the better software to these shores. After all, *Infocom* and *Adventure International* may be the best-known but they're certainly not the only Stateside houses producing very worthy offerings.

Happily, the software arm of W H Smith Distributors are now including in their trade catalogue the products of *Spinnaker* and *Trillium* (renamed *Telarium* for the UK, for tortuous business reasons), so you can expect to see these hit the high street shelves any minute now.

I've had just the briefest chance to acquaint myself with **Swiss Family Robinson** — a graphic adventure from *Spinnaker* with some neat and timesaving features to simplify input which the younger player will certainly appreciate. Other titles in the *Windham Classic* series are **The Wizard of Oz**, **Gulliver's Travels**, **Treasure Island**, **Robin Hood** and **The Wind in the Willows**. All are on disk at £14.95.

The *Telarium* list is aimed at the more advanced adventurer, and I plan to review **Amazon** next month — a double disk/four sided graphic adventure devised by science fiction author Micheal Crichton; remember **The Andromeda Strain**? First impressions are that *Amazon* really is something special and I recommend you pester your software dealer for an early sneak preview to judge for yourself. Other titles include **Rendezvous with Rama** by Arthur C Clarke, **Dragonworld**, **Fahrenheit 451**, and **Shadowkeep**. They all sell at £19.95 — very pricey, but the quality and professionalism of the presentation has to be seen to be appreciated.

Two from Activision

You sure couldn't accuse Activision of going out of

their way to sell their first US adventure imports on the strength of their good looks.

For single-disk titles costing £19.99 a piece, you'd expect something a little better than the flimsy cardboard box that **Mindshadow** and **The Tracer Sanction** come in. Maybe Activision still believe that micro adventures are a bunch of weirdos who don't care a toss for window dressing and only buy on word of mouth recommendation anyway.

Still, I've started exploring **Mindshadow** and have to say that if the game as a whole matches up to the graphics then it's bound to be among

Book look

One of the most regrettable repercussions of the subversive pound is the premium it creates in the cost of knowledge. I was browsing through an American computer guide the other day that cost £16.50!

Fortunately, though, Holt Saunders are now marketing titles from a number of leading American publishers under the umbrella — and this means that good titles from DiLithium and the Computer! stable, for example, should be available at slightly more digestible prices.

computer adventures are likely to develop in the future. Gary McGath makes the point that decision-making is intrinsic to adventure games, yet this fundamental element has yet to reach anything like its full potential; after all, he points out, even noughts and crosses offers a possible 362,880 different games...

Have you every considered how little use conventional adventures really make of your computer's talent for numeracy? Why don't good computerised wargames and battle simulations — such as

ADVENTURE NEWS • ADVENTURE NEWS • ADVENTURE NEWS

RED SCARE

Frederick Forsyth's best selling novel *The Fourth Protocol* is shortly to be released as a computer adventure.

The adventure is in three parts and casts the player as M15 agent — John Preston — whose task it is to thwart the KGB's Plan Aurora to let off a nuclear bomb in the UK and blame it on slack security at American bases.

Part one features a splendid icon-driven adventure in the style of *Beyond's Shadowfire*. A screen cursor selects icons representing various actions — files, surveillance, communication via the telephone, three computer VDU's and various other items. Select and implement by placing the cursor over the required object and press fire.

The object of this part of the game is to get John Preston inside the building where the bomb is hidden. This is an inspired piece of adventure programming, when that phone rings it really sounds like the real thing.

Part II sounds like a bit of a cop out. An arcade game — yuk — the objective of which is to dodge the guards in the corridors whilst searching for the bomb.

Back to real adventure again in part III where you have to use codes learned in the previous parts of the game to defuse the bomb.

The *Fourth Protocol* was programmed by a team of freelance programmers called the Red Pencil Company and is published by Hutchinson. If this game is a success the publishers may follow it up with a game version of Forsyth's best known book — the *Day of the Jackal*, and a game based on their



A device which you naturally recognise as the fuse of an atomic weapon slides out of the cabinet. On it are four coloured flashing lights, blue, green, red and yellow. What now?



the most original adventures I've ever come across; if you could imagine one of the French Impressionists drawing for Marvel Comics, you'll get some idea of the result I'm trying to describe.

Indeed, I'm still trying to fathom out the secrets of **Mindshadow's** distinctive visual appeal. And wait until you meet **Condor** — a kind of louche buzzard who'll help you out three times (but only three) each time you play. Frightful price and strangely careless packaging — but the game is definitely growing on me.

One I can particularly recommend is Gary McGath's **Guide to Adventure Games** (£10.95), a chunky and very readable 200-page compendium of fascinating facts and hints.

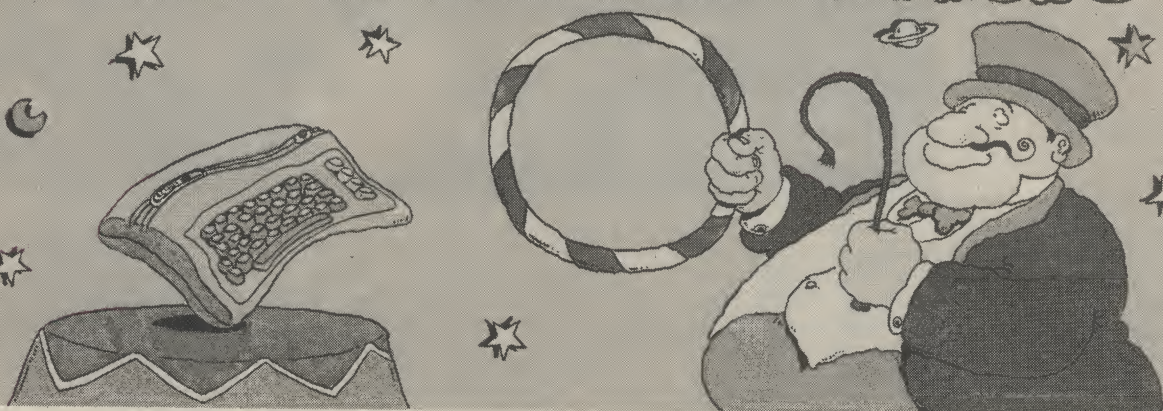
There are chapters on the great adventure houses such as *Infocom*, *Scott Adams* and *Sierra on-Line*, including scenarios of their most famous titles; well-explained descriptions of the programming tricks they use; guidance on writing your own text adventures (with helpful pseudo-code routines which any brand of Basic can handle).

There's also an intriguing chapter on the way in which

the acclaimed *Lothlorien* titles — enjoy anything like a popular success? Maybe it's because most of us still hold on to the old concept of a wargame being a boring old stomp round a grid.

Well, they're not like that anymore — as *Owen and Audrey Bishop's Commodore 64 Wargaming* (Collins, £8.95) proves most convincingly in its 248 fact-packed pages of know-how, with Basic routines and listings for four full-scale games; a medieval skirmish, a D-Day encounter, a Napoleonic campaign, and a battle in outer space. Even if it doesn't convert you to wargames, you'll pick up loads of techniques which you can use.

BEGINNERS BASIC



Part 4 — a useful application

by Brian Grainger

We've reached the final part of our Basic tutorial, so it's time to produce a really useful program, one that will let you keep track of your bank account. And while you're doing that, you'll learn a thing or two about logical operators, saving and loading on tape, and using subroutines.

Last time the homework was a bit tricky. I found out how tricky when I came to work on the answer! The main problem is not the fundamental parts of the program but catering for the possible errors a user might make when running the program. Anyway, here's my solution:

A few points from the program. Firstly on line 380, I used IF ... THEN GOTO. When the THEN is immediately followed by a GOTO the Basic language will allow you to drop either the THEN, or the GOTO.

Did you notice my use of REM statements in the pro-

```
100 BA=100 : NT=0
110 REM START
120 PRINT"[CLS]WHAT DO YOU WANT TO DO?"
130 PRINT
140 PRINT"PRESS 1 TO INPUT SOME TRANSACTIONS
150 PRINT"PRESS 2 TO DISPLAY THE BANK STATEMENT
160 PRINT"PRESS 3 TO REMOVE ALL TRANSACTIONS
AND"
170 PRINT" RESET THE BALANCE"
172 PRINT"PRESS 0 TO FINISH"
180 PRINT
190 INPUT CH
200 ON CH GOTO 300,400,500
210 END
220 REM .....
300 REM INPUT TRANSACTIONS
305 NT=NT+1
310 PRINT"[CLS]TRANSACTION DESCRIPTION"
320 INPUT TD$(NT)
330 INPUT"[CD]CASH VALUE":CV(NT)
340 PRINT"[CD]TYPE 'D' FOR A DEBIT OR 'C' FOR A
CREDIT"
350 INPUT TT$(NT)
360 PRINT"[CD]ANY MORE? TYPE 'Y' FOR YES, 'N' FOR
NO"
370 INPUT AN$
380 IF AN$="Y" THEN GOTO 300
390 IF AN$="N" THEN GOTO 110
395 PRINT "ANSWER NOT VALID" : GOTO 360
397 REM .....
400 REM DISPLAY STATEMENT
405 CB=BA
```

```
410 PRINT "[CLS]INITIAL BALANCE IS":BA
415 IF NT=0 THEN PRINT"[CD]THERE ARE NO TRANS
ACTIONS" : GOTO 470
420 FOR I=1 TO NT
430 PRINT TD$(I); " OF VALUE":CV(I); "IS A ";
440 IF TT$(I)="D" THEN PRINT"DEBIT" : CB=CB-CV(I) :
GOTO 460
450 PRINT"CREDIT" : CB=CB+CV(I)
460 NEXT I
470 PRINT"[CD]CURRENT BALANCE IS":CB
480 PRINT"[CD]HIT A KEY TO CONTINUE"
490 GET AS : IF AS="" THEN 490
495 GOTO 110
497 REM .....
500 REM RESET THE BALANCE
505 IF NT=0 GOTO 570
510 FOR I=1 TO NT
520 IF TT$(I)="D" THEN BA=BA-CV(I) : GOTO 540
530 BA=BA+CV(I)
540 TD$="" : CV(I)=0 : TT$=""
550 NEXT I
560 NT=0
570 GOTO 110
```

gram such as line 300? Any characters after a REM are simply remarks to make the program easier to understand. Here I used them to split up and title the various sections of the program.

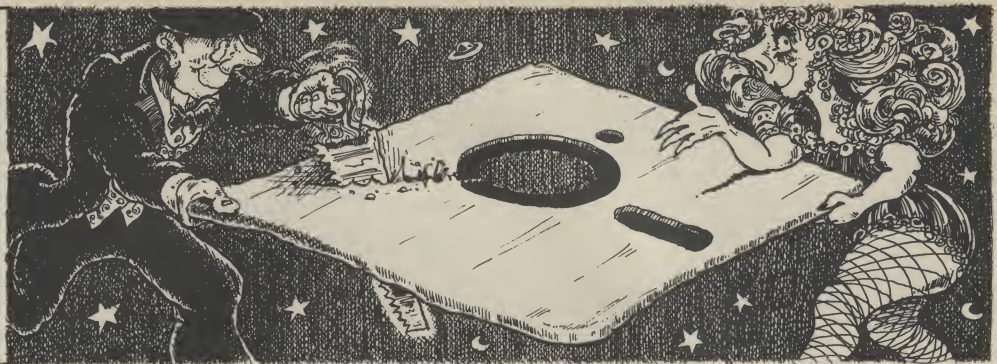
One final comment is that the program will only deal with up to ten transactions. If we dimension the arrays at the start then a more realistic number could be given.

Logical Operators

Last time I introduced the

relational operators, '=', '<', '>', '<=', '>=', used in logical expressions for IF statements. In all the examples so far each IF statement has only considered whether a single statement was true. But what happens if we only wanted to do something if two or more statements were true? The answer is to use the **logical operators**. There are three of these, AND, OR and NOT:

*'split up
and title the
various parts
of the
programs'*



● **AND** connects two logical expressions when we wish the result to be *true* only if *both* the expressions are *true*.

● **OR** is used when we wish the result to be *true* if *either* or *both* of the expressions are *true*.

● **NOT** is used with a single logical expression and the result will be *true* if the expression is *false* and vice versa.

Data input and output

In last month's problem you probably realised that the result was not much use because once the computer was turned off we lost all the information on our transactions. We need to be able to *store* the values so that we can switch the computer off and then when we have written some more cheques or received a pay packet we can add these to the transactions. We need a means of saving and loading data.

So we must do three things: tell the cassette unit that we are going to send some data and we want to write it to a tape, send the data, and finally tell the cassette that we have finished.

Saving data

To tell the datasette we are going to send data which needs writing to tape we say: **OPEN 5,1,1,"FILENAME"**. This tells the computer to open a file, which we shall reference in the program by the number 5, on the unit whose number is 1, the datasette. The final '1' says open the file for writing, rather than reading. Finally we attach a filename, which must be no more than 16 characters long, so that we can find the file again on a tape that may have more than one data or program file on it.

We send data on the datasette in a similar manner to sending data to the screen. Instead of **PRINT** we use **PRINT#** and follow it with the file reference number.

With the above **OPEN** statement we could say: **PRINT#5, TD\$(I)** or **PRINT#5, CV(I)** or **PRINT#5, TT\$(I)**. This will send the description, value and type of transaction I to the datasette.

To tell the computer we have finished sending data we close the file with **CLOSE 5**. It is very important to close the file because if you don't and some information is still in the buffer it will not get written to tape! So here's the routine.

```
600 REM WRITE TRANS
    ACTIONS TO TAPE
```

```
610 OPEN 5,1,1,
    "STATEMENT"
```

```
620 PRINT#5, BA
```

```
625 IF NT=0 THEN NT=I :
```

```
    TD$(I) = "DUMMY" :
```

```
    CV(I) = 0 : TT$(I) = 'C'
```

```
630 FOR I=1 TO NT
```

```
640 PRINT#5, TD$(I)
```

```
650 PRINT#5, CV(I)
```

```
660 PRINT#5, TT$(I)
```

```
670 NEXT I
```

```
675 CLOSE 5
```

```
680 GOTO 110
```

We would also have to add some new lines at the start of the program to access the new routine but as I'm going to add a few more routines yet I'll do that at the end!

Loading data

Now that we've saved the data to tape we need a routine to load it back when we use the program again. This time we need to tell the datasette that we want to read data from tape, then we wish to input the data and finally we want to tell the cassette when we have finished reading data. To do this, we use an **OPEN** statement again. This time we have: **OPEN 5,1,0,"FILENAME"**. The only difference from the **OPEN** statement for writing data is to use a '0' instead of the final '1'. This is how we tell the datasette we want to read rather than write it.

To input the data from the tape file we use **INPUT#** in much the same way as **PRINT#**, so we get: **INPUT#5, TD(I)** or **INPUT#5,**

CV(I) or **INPUT#5, TT\$(I)**. And don't forget to close the file with **CLOSE5**.

We can now write our routine to read the data from tape back into memory:

```
700 REM READ TRANS
```

```
    ACTIONS FROM TAPE
```

```
710 I=0
```

```
720 OPEN 5,1,0,
```

```
    "STATEMENT"
```

```
730 INPUT#5, BA
```

```
740 I=I+1
```

```
750 INPUT#5, TD$(I)
```

```
760 INPUT#5, CV(I)
```

```
770 INPUT#5, TT$(I)
```

```
780 IF ST<>64 THEN 740
```

```
790 CLOSE 5
```

```
795 NT=I
```

```
797 GOTO 110
```

Line 780 needs some explaining. **ST** is an inbuilt Basic variable like **TI**. It is set to a value every time a **PRINT#** or an **INPUT#** is carried out. When **ST** has a value of 64 it means that the last item has

been read from the tape file, which in our case means there are no more transactions to read. So we have therefore set up a **REPEAT . . . UNTIL** no more data is on the tape.

when we split the problem up into little sub-programs. In Basic these sub-programs are called *subroutines*. Splitting a large program up into little programs is one use of a subroutine. Another use is when we have a sub-program that we may wish to use at more than one place in the complete code. It's time consuming and wasteful of computer memory to type the instructions in more than once. What we do is write the repeated instructions as a subroutine and then tell the computer to execute the subroutine in the various places in the program.

To create a subroutine we simply write the instructions and then after the final instruction we add another line of code: **123 RETURN**. This **RETURN** statement tells the computer to continue execu-



been read from the tape file, which in our case means there are no more transactions to read. So we have therefore set up a **REPEAT . . . UNTIL** no more data is on the tape.

Looking at subroutines

From the above examples we've found it very much easier to write our program

*'a dimension
code has been
added to cope
with thirty
transactions'*

Start a business and learn about balance sheets, profit, cash flow, bank loans.

ENTREPRENEUR

Take the guesswork out of prediction and plan ahead.

FORECASTER

Need help with figures? Work out VAT, PAYE, margins, interest...

NUMBERS AT WORK

Discover the constellations and learn the secrets of your universe.

STARWATCHER

Schedule work, meet deadlines and save time and money.

PROJECT PLANNER

Work out your best move to make the most of your opportunities.

DECISION MAKER

Get soft with your micro... and make the best of it with Brainpower

SEND FOR MORE BRAINPOWER TODAY.

Are you really making the best of your micro — are you still using too much of your own brainpower? We at Collins Soft have some very good news, six simple to use software packages called Brainpower that put you firmly in control and help you realise your own full potential.

Skills that will help you make decisions. Skills that help you plan ahead. Skills which can help your business. Skills to discover the universe and skills which will organise your work.

With Collins range of Brainpower software you get a Teaching Program and Book which show

you how easy Brainpower is to use on your BBC, Commodore 64 or Spectrum, plus the main Applications Program itself. Discover Brainpower at WH Smith, Boots, Menzies and all good Computer Shops or simply post the coupon for information — today.



NOMINATED FOR
MICRO COMPUTING
BRITISH AWARDS
1985

Read what they have said about Brainpower.

ENTREPRENEUR
If you intend to go into business, Entrepreneur is an essential investment — Practical Computing.

PROJECT PLANNER
The manual has a simplicity that is endearing — Commodore Horizons.

STAR WATCHER
The best star-gazing program so far available on microcomputer — John Walker — leading software writer.

FORECASTER
I found the theories of prediction fascinating — Commodore Horizons.

DECISION MAKER
In many ways it has succeeded in an area that few other programs have even attempted — using the computer to educate adults — Popular Computing Weekly.

Please send me my Collins Soft Brainpower brochure ☐ (please tick)

Name

Address

Post Code

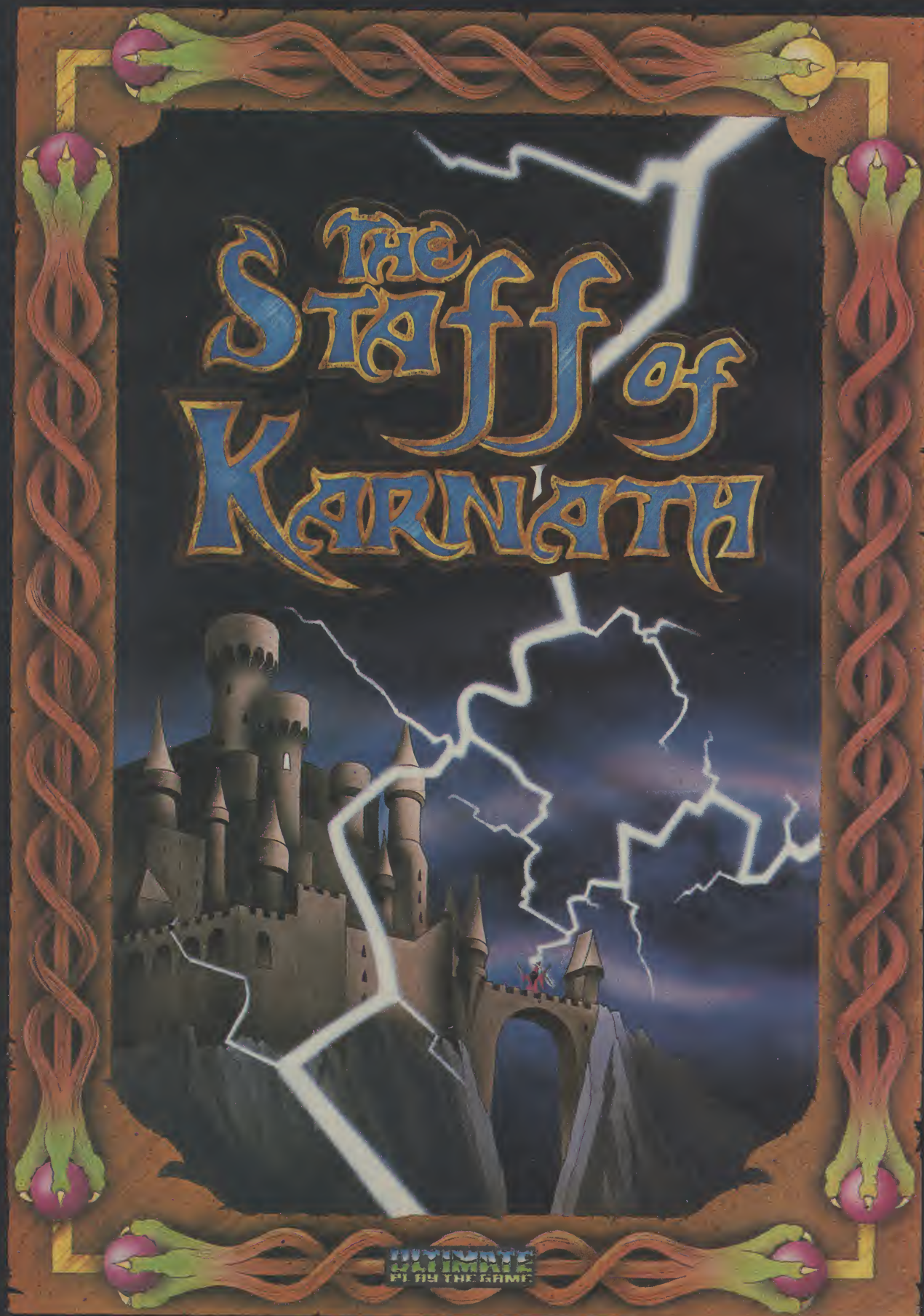
BRAINPOWER

Application through learning
Collins Soft, FREEPOST 30, London W1E 7JZ

CU 5/85

COLLINS
SOFT

COMMODORE 64 (Joystick Compatible)



"THE STAFF OF KARNATH" recommended retail price £9.95 inc VAT
Available from W.H.SMITHS, BOOTS, J.MENZIES, WOOLWORTHS
and all good software retail outlets. Also available from
ULTIMATE PLAY THE GAME, The Green, Ashby-de-la-Zouch, Leicestershire LE6 5JU
(P&P included) Tel: 0530 411485

tion at the line following that which called the subroutine.

It is not possible to use a GOTO statement because the line number target of the GOTO would be different each time if the subroutine was called in different parts of the program. To call a subroutine we say: 345 GOSUB 1234, where 1234 is replaced by the line number of the first line of the sub-program.

As an example of a subroutine let us suppose we wish to write a program which gives an indication of the effect of rounding errors when numbers are rounded to two decimal places before and after multiplication.

```
100 REM TO ILLUSTRATE
    THE EFFECTS OF
    ROUNDING
110 INPUT "FIRST
    NUMBER";A
120 INPUT "SECOND
    NUMBER";B
130 PRINT "THE VALUE OF
    A*B IS";A*B
140 SA=A : GOSUB 500 :
    A=SA
150 SB=B : GOSUB 500 :
    B=SB
160 SA=A*B : GOSUB 500
170 PRINT "WHEN ALL
    NUMBERS ARE
    ROUNDED TO TWO"
180 PRINT "DECIMAL
    PLACES THE RESULT
    IS";SA
190 END
500 SA=SA*100
510 SA=INT(SA+0.5)
520 SA=SA/100
530 RETURN
```

Two points to note here. Firstly the subroutine is used three times but with a different input value in each case. Because we always use the

same variables every time the subroutine is used we have to introduce an extra one, SA, to be used in the subroutine. SA is then set to whichever number we want to round. Similarly when we finish the subroutine the result has to be stored somewhere otherwise it would be lost when the subroutine is used again. The technical term for the variable SA is a *parameter* of the subroutine.

The second point is that we must use an END statement in line 190. If we didn't the subroutine lines would be executed again by mistake. Subroutines can be placed anywhere in the program but put them at the end so you can easily stop them being executed incorrectly.

ON ... GOSUB

Just as we had an ON ... GOTO statement we can have an ON ... GOSUB which operates in the same way except instead of going to a specific line number on the result of a variable value the program will call up a specific subroutine. When the subroutine is finished the program will go to the statement following the ON ... GOSUB. We can use this idea in the banking program. By a small modification at the start and by using an ON ... GOSUB instead of an ON ... GOTO we can use the little sub-programs we have created. We must, however, replace the GOTO 110 at the end of each sub-program with a RETURN statement. Let's put everything together to form the final program.

```
350 INPUT TT$(NT)
360 PRINT "[CD]ANY MORE? TYPE 'Y' FOR YES, 'N' FOR
    NO"
370 INPUT AN$
380 IF AN$="Y" THEN GOTO 300
390 IF AN$ < > "N" THEN PRINT "ANSWER NOT VALID" :
    GOTO 360
395 RETURN
397 REM .....
400 REM DISPLAY STATEMENT
405 CB=BA
410 PRINT "[CLS]INITIAL BALANCE IS";BA
415 IF NT=0 THEN PRINT "[CD]THERE ARE NO
    TRANSACTIONS" : GOTO 470
420 FOR I=1 TO NT
430 PRINT TD$(I);" OF VALUE";CV(I); "IS A ";
440 IF TT$(I)="D" THEN PRINT "DEBIT" :
    CB=CB-CV(I) : GOTO 460
450 PRINT "CREDIT" : CB=CB+CV(I)
460 NEXT I
470 PRINT "[CD]CURRENT BALANCE IS";CB
480 PRINT "[CD]HIT A KEY TO CONTINUE"
490 GET AS : IF AS="" THEN 490
495 RETURN
497 REM .....
500 REM RESET THE BALANCE
505 IF NT=0 GOTO 570
510 FOR I=1 TO NT
520 IF TT$(I)="D" THEN BA=BA-CV(I) : GOTO 540
530 BA=BA+CV(I)
540 TD$="" : CV(I)=0 : TT$=""
550 NEXT I
560 NT=0
570 RETURN
580 REM .....
600 REM WRITE TRANSACTIONS TO TAPE
610 OPEN 5.1.1."STATEMENT"
620 PRINT #5,BA
625 IF NT=0 THEN NT=1 : TD$(I)="DUMMY" : CV(I)=0 :
    TT$(I)="C"
630 FOR I=1 TO NT
640 PRINT #5,TD$(I)
650 PRINT #5,CV(I)
660 PRINT #5,TT$(I)
670 NEXT I
675 CLOSE 5
680 RETURN
690 REM .....
700 REM READ TRANSACTIONS FROM TAPE
710 I=0
720 OPEN 5.1.0."STATEMENT"
730 INPUT #5,BA
740 I=I+1
750 INPUT #5,TD$(I)
760 INPUT #5,CV(I)
770 INPUT #5,TT$(I)
780 IF ST < > 64 THEN 740
790 CLOSE 5
795 NT=1
797 RETURN
```

```
100 REM COMPLETE BANKING PROGRAM
105 DIM TD$(30), CV(30), TT$(30)
110 REM START
120 PRINT "[CLS]WHAT DO YOU WANT TO DO?"
130 PRINT
140 PRINT "PRESS 1 TO INPUT SOME TRANSACTIONS
150 PRINT "PRESS 2 TO DISPLAY THE BANK STATEMENT
160 PRINT "PRESS 3 TO REMOVE ALL TRANSACTIONS
    AND"
170 PRINT "RESET THE BALANCE"
172 PRINT "PRESS 4 TO WRITE TRANSACTIONS"
174 PRINT "PRESS 5 TO READ TRANSACTIONS"
178 PRINT "PRESS 0 TO FINISH"
180 PRINT
190 INPUT CH
200 ON CH GOSUB 300,400,500,600,700
205 IF CH < > 0 THEN 110
210 END
220 REM .....
300 REM INPUT TRANSACTIONS
305 NT=NT+1
310 PRINT "[CLS]TRANSACTION DESCRIPTION"
320 INPUT TD$(NT)
330 INPUT "[CD]CASH VALUE";CV(NT)
340 INPUT "[CD]TYPE 'D' FOR A DEBIT OR 'C' FOR A
    CREDIT"
```

I have made a small change to lines 390 and 395 to turn the input transaction code into a subroutine and a dimension statement has been added to cope with thirty transactions. To use the complete program you must create a tape file STATEMENT. Do this by typing the following from the keyboard when using the program for the first time: GOSUB 600.

You may now rewind the tape and run the program. I suggest you use two tapes. One to read the last set of data and one to write the updated data. If you alternate between these two tapes you will always have a record of the current status and that previous in case anything untoward should happen.

Phew, that's brought us to the end of our Basic course. We've covered the fundamental ideas of programming and we've produced a useful banking program that you can use in the home, which incorporates most of the ideas we discussed during the course. You now have the tools to get your computer to do what YOU want.

Firstly, you need to decide just what you require from a printer. We've already decided to restrict our price to under £250. So, if speed is your number one priority, then you will probably go for a dot matrix printer which is capable of speeds of up to 120 characters per second. If you require typewriter quality, then a daisy wheel may be the right choice. But there aren't too many of those for under £250. Remember, however, that there are several dot matrix printers which combine near letter quality printing with top speeds.

Secondly, you will almost certainly require an interface to allow your Commodore computer to 'talk' to your printer. Your choice of interface will be governed, again, by your requirements. Again, we're restricting our range to £50. Probably the most common printer interface for connecting printers to micros is the Centronics parallel interface and so we are looking only at these in this article.

Types of interface

Many interfaces contain a chip on the circuit board to convert the non-standard Commodore ASCII characters into standard ASCII and are thus called 'intelligent' interfaces. Other interfaces use a piece of software called a 'driver', which must be loaded to use the interface with your own programs. These are usually called 'dumb' interfaces. Many commercially available programs, especially word-processors, already contain the necessary software to drive a printer and so, with these programs, only the cable is really needed.

One word of warning before we start looking at the products available. It's not possible for us to test every combination of printer and interface adaptor mentioned. We can only give a guide. You must satisfy yourself that the devices you've chosen will do the job you require *before* opening your wallet. The best and obvious way to do that is to insist that your dealer gives a demonstration. So let's start by looking at the three types of interface adaptor you can buy for under £50.

Intelligent interfaces

At £39.95, the Centronics parallel interface from **Zero Electronics** (pic 1) is one of



THE CENTRONICS

How to choose a printer

Buying a printer for your Commodore computer? Commodore printers not to your liking because they're slow, noisy or just too dear? You've got a problem. Almost every non-Commodore printer at under £250 has a Centronics interface. So you'll need an interface adaptor to

the more impressive looking interfaces on the market. It works with the Vic, 64, 16 and Plus/4 machines. The neat brown box plugs into the Centronics port of the printer. There are two leads, one which goes into the serial port of the Commodore computer or disk drive and the other into the cassette port for the power supply. A small adaptor on the back of the cassette plug allows the cassette recorder to be used as normal.

Unfortunately, the box doesn't use the clips on my Epson RX80 Centronics connector so giving the impression of being none too securely attached. The manual does contain several misprints which are rather confusing and could fox the novice, but on the whole I found it easy to follow and reasonably comprehensive.

The Zero interface has two character sets which correspond to those on the Commodore 64 and Vic 20 and you make the choice by means of the 'secondary address'. For example, the secondary address 7 gives

you upper and lower case characters for wordprocessing. High resolution bit-mapped graphics can be sent to the printer so that you can dump the screen exactly to the printer. You can also print out the special Commodore graphics characters in a fairly recognisable form between '@' signs. There are, however, no facilities available for a carriage return with line feed.

I tried the Zero Electronics interface with Easy Script and found it worked perfectly. With the Ultrabasic high resolution screen dump I found it rather erratic as it

worked with some pictures and not with others. All in all, I would say that this is a good product at a reasonable price and should definitely be considered, especially as Zero also offers an optional 16K printer buffer for a mere £13.95.

Parallel Printer Interface: £39.95, from Zero Electronics, 149 Kingstreet, Great Yarmouth. Tel: 0493 842023. Optional 16K Printer buffer: £12.95.



ES CONNECTION

printer and interface

make it work with your Commodore computer, and you probably won't want to spend more than £50 for it. But which one to buy? And which printer offers the facilities you want? We've rounded up the complete sub-£250 range.

by Valerie Buckle

The second intelligent interface I looked at was the **Trippler** (pic 2) from **RAM Electronics** (they call it the **Vicsprint 2064**). It's a little more expensive at £49.95. It consists of a length of ribbon cable with a Centronics plug on one end which goes to the printer using the clips provided, and a cartridge-type box on the other end which plugs into the user port of your Vic or 64. A cable with a Din plug from the box goes into the serial port on the computer or disk drive. Taking its power supply thus from the user port, you cannot use the user

port for any other peripherals.

The Trippler allows you to perform a carriage return with or without line feed depending on the file number used. Secondary address modes are used to access all the other options available with the Trippler. Upper case only or both upper and lower case characters are possible, and the Trippler also interprets the Commodore graphics characters in an acceptable manner. High resolution bit-mapped graphics can be dumped to the printer using the software

available (although the instructions say that this is not possible).

I encountered no problems when using the Trippler with both Easy Script and UltraBasic, but I found that it doesn't appear to print out the entire control character set. Another point to mention is that my screen was fuzzy whenever I had the Trippler in place. But I have no real complaints. I would recommend this interface strongly.

Vicsprint 2064
(Trippler): £49.95 from
Ram Electronics
(Fleet) Ltd, 106 Fleet
Road, Fleet, Hants
GU13 8PA. Tel: 02514
25252.

Interfaces with software drivers

The **Commodore Connexion** (pic 3) is one of a breed of 'dumb' interfaces whose drivers come as accompanying software. For your £19.95 you get a cable, one end of which you plug into the user port of your Commodore 64

(there is no Vic version) and the other end into the Centronics port of your printer. Also included in the price is the tape-based driver software. The program is located behind the Kernal ROM so no user memory is lost.

The instructions contained no reference as to how to connect the cable, but were otherwise quite comprehensive. The interface has, essentially, two modes of control which are selected by choosing device number 4 or 5. One mode gives you carriage return with line feed and the other prints the characters direct. Upper and lower case characters can be printed out by selecting a secondary address of '7' and I had no problems using Easy Script with this interface. Commodore graphics characters are replaced with mnemonics, but there appear to be no facilities available for dumping high resolution bit-mapped graphics to the printer.

Cheap and cheerful, this one performed what it could reasonably well, but it restricts the uses of the Commodore to an unacceptable degree.

The **Commodore Connexion**: £19.95 from **SMC Supplies**, 11 Western Parade, Gt. North Road, Barnet, Herts EN5 1AD. Tel: 01-441 1282.

Mushroom Software advertise a Centronics interface for the Commodore 64 which is an update of the popular **Epson Magic**. This connects the printer to the user port and is available with or without the software driver on tape or disk.

In addition to the standard carriage control facilities, this interface will also represent the Commodore graphic and control characters, allow upper case only or upper and lower case characters to be sent to the printer, all through use of secondary addressing.

What sets this apart from many other 'dumb' interfaces is its ability to dump high resolution bit-mapped graphics screens to your printer. Although I have not tried this interface, the manufacturers assure me that most commercial software for the Commodore 64 will work with most Centronics printers.

THE CENTRONICS CONNECTION

Centronics interface: £10 for the cable plus £9.50 for the software driver on tape (disk version £2 extra) from Mushroom Software, 193 Rommany Road, London SE27 9PR. Tel: 01-670 3533.

Chromasonic Computer Centre offer another Centronics interface with tape based software. At £19.95 for the cable which plugs into the user port and the Centronics port on the printer and an extra £7.95 for the software this is considerably more expensive than the other 'dumb' interfaces described here.

Standard carriage control facilities, upper case printing for Basic programs, upper

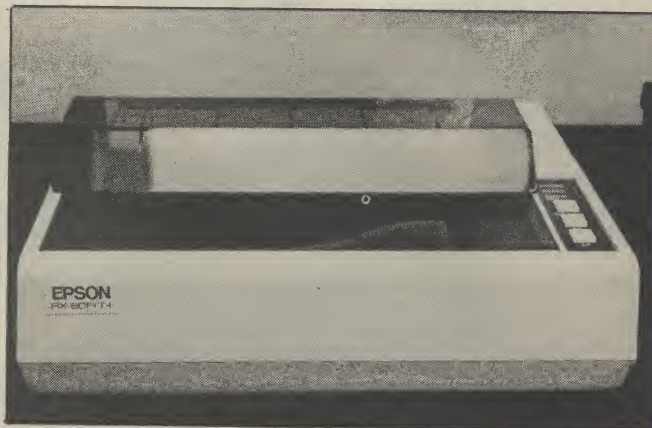
and lower case for word-processing, conversion of Commodore graphics and some control characters are all available via secondary addressing.

This interface does not allow high resolution bit-mapped graphics dumps and there is no software available from Chromasonic to allow you to do this. So it doesn't seem to match the claims of the Mushroom Software interface.

Centronics interface: £19.95 for the cable and £7.95 for software driver from Chromasonic, 48 Junction Road, Archway, London N19 5RD. Tel: 01-263 9493.

Printlink must be one of the most popular Centronics interfaces for Commodore machines. It sells for £29.90 and is available for both the Vic and 64. It is very similar to the RAM Electronics interface in looks and consists of a cable of which one end (once again) plugs into the user port and the other into the Centronics port of the printer. The software driver is available either on tape or disk.

Printlink differs from the other interfaces mentioned here in that instead of using secondary addressing, it uses a direct POKE to the machine-code program to control the modes of operation.



The classy Epson RX80 won't leave you much change from £250.

Printers less than £100

PRODUCT: Alphacom-42, £49.95
SUPPLIER: Dean Electronics, Glendale Park, Fernbank Road, Ascot, Berks. Tel: 0344 885661
INTERFACES: Plug-in cartridge (will reproduce Commodore graphics set)
PRINT MATRIX: n/a
PRINTING SPEED: 80 cps
PAPER FEED: Friction feed
PAPER WIDTH: 4.25 ins
COLUMNS: 40
PRINT DIRECTION: n/a
PRINT QUALITY: Thermal

PRODUCT: Alphacom-81, £79.95 (pic 4)
SUPPLIER: as above
INTERFACES: as above
PRINT MATRIX: n/a
PRINTING SPEED: 100 cps
PAPER FEED: Friction feed
PAPER WIDTH: A4
COLUMNS: 80
PRINT DIRECTION: n/a
PRINT QUALITY: Thermal

Printers from £100-£150

PRODUCT: MPS 801, £149
SUPPLIER: Commodore Business Machines (via dealers)
TYPE: Dot matrix
INTERFACES: Commodore Serial (2 ports)
PRINT MATRIX: 6x7

PRINTING SPEED: 50 cps
PAPER FEED: Tractor feed
PAPER WIDTH: 4.5 to 10 inch
COLUMNS: 80
PRINT DIRECTION: Uni-directional

PRODUCT: Brother HR5, £144
SUPPLIER: Brother Office Equipment, Manchester (via dealers)
TYPE: Thermal dot matrix
INTERFACES: Centronics or RS232
PRINT MATRIX: 9x9
PRINTING SPEED: 30 cps
PAPER FEED: Friction feed
PAPER WIDTH: 8 inches
COLUMNS: 80
PRINT DIRECTION: Bi-directional

Printers from £150-£200

PRODUCT: Epson P-80, £160 (pic 5)
SUPPLIER: Epson (via dealers)
TYPE: Thermal transfer
INTERFACES: Serial — Centronics to follow
PRINT MATRIX: 9x9
PRINTING SPEED: 45 cps
PAPER FEED: Friction
PAPER WIDTH: 8.5 ins
COLUMNS: 80
PRINT DIRECTION: Uni-directional

PRODUCT: Fastext 80, £170 (pic 6)
SUPPLIER: Smith-Corona (via dealers)
TYPE: Dot matrix

INTERFACES: Centronics and/or RS232
PRINT MATRIX: 9x9
PRINTING SPEED: 80/160 cps
PAPER FEED: Tractor or friction feed
PAPER WIDTH: 10 ins
COLUMNS: 80
PRINT DIRECTION: Bi-directional

PRODUCT: Ibico LTR 1, £175 (pic 7)
SUPPLIER: Ibico Ltd, 181 Spring Grove Road, Isleworth, Middlesex
TYPE: Daisy wheel (chs. on cylinder)
INTERFACES: Centronics
PRINT MATRIX: n/a
PRINTING SPEED: 12 cps
PAPER FEED: Friction feed, single sheet
PAPER WIDTH: 8.5 ins
COLUMNS: 80
PRINT DIRECTION: Bi-directional
PRINT QUALITY: Letter quality

PRODUCT: Brother M1009, £179 (pic 8)
SUPPLIER: Brother Office Equipment, Manchester (via dealers)
TYPE: Dot matrix
INTERFACES: Centronics and/or RS232
PRINT MATRIX: 9x9
PRINTING SPEED: 50 cps
PAPER FEED: Tractor or friction feed
PAPER WIDTH: 8 ins
COLUMNS: 80
PRINT DIRECTION: Bi-directional
PRINT QUALITY: Near letter quality

PRODUCT: Star Gemini 10X, £190
SUPPLIER: Star (via dealers)
TYPE: Dot matrix
INTERFACES: Centronics
PRINT MATRIX: 9x9
PRINTING SPEED: 120 cps
PAPER FEED: Tractor or friction feed
PAPER WIDTH: 11 ins
COLUMNS: 80
PRINT DIRECTION: Bi-directional
PRINT QUALITY: Near letter quality

PRODUCT: OKI Microline 80, £199
SUPPLIER: X-Data, 750-51 Deal Avenue, Slough Trading Estate, Slough, Berks. Tel: 0753 72334
TYPE: Dot matrix
INTERFACES: Centronics
PRINT MATRIX: 9x7
PRINTING SPEED: 80 cps
PAPER FEED: Tractor or friction
PAPER WIDTH: A4 ins
COLUMNS: 80
PRINT DIRECTION: Uni-directional
PRINT QUALITY: Good

Printers from £200-£250

PRODUCT: MT80, £220
SUPPLIER: Mannesman Tally, Molly Millars Lane, Wokingham, Berks RG11 2QT. Tel: 0734 791868 (via dealers)
TYPE: Dot matrix
INTERFACES: Centronics
PRINT MATRIX: 9x7
PRINTING SPEED: 100 cps

tion. You can print exactly as the screen display, force a Commodore ASCII to ASCII conversion (enabling Commodore graphic characters to be represented as upper case characters and Basic in lower case characters), or dump the screen directly to the printer for printing out high resolution bit-mapped graphics displays.

Printlink 64: £29.90 from Supersoft, Winchester House, Canning Road, Wealdstone, Harrow, Middx HA3 7SJ.

Stack 100 offer a Centronics interface for the Vic 20 or Commodore 64 for a mere £24.00. I like the style of this interface, in particular the strengthened cable and solid plugs. The driver software comes on tape, or disk for an extra £5. I have not tried this

interface myself but friends report that it works well with Easy Script.

The adverts state, however, that it does not work with all commercially available software and I have a friend who had to buy another interface to use with a specific piece of software which wouldn't work with the Stack. So, check carefully before buying this interface. Unfortunately, Stack has gone bankrupt but its products are still available. See below.

Stack Centronics interface: £24.00 (disk version £5.00 extra) from Medemore Ltd, 12 Gauden Road, Wythenshaw, Manchester.

Next month, we'll be looking at three top of the range interface adaptors, none of which will leave you much change from £100.

PAPER FEED: Tractor or friction feed
PAPER WIDTH: 4-10 ins
COLUMNS: 80
PRINT DIRECTION: Bi-directional
PRINT QUALITY: Near letter quality

PRODUCT: Walters WM 80, £199
SUPPLIER: Walters Microsystems International, Cetec House, Lincoln Road, Cressex Industrial Estate, High Wycombe, Bucks HP12 3QU

TYPE: Dot matrix
INTERFACES: Centronics
PRINT MATRIX: 7x8
PRINTING SPEED: 80 cps
PAPER FEED: Tractor and friction feed
PAPER WIDTH: 4-10 ins
COLUMNS: 80
PRINT DIRECTION: Bi-directional
PRINT QUALITY: Good

PRODUCT: Daisy Step 2000, £250
SUPPLIER: Via dealers
TYPE: Daisy Wheel
INTERFACES: Centronics
PRINT MATRIX: n/a
PRINTING SPEED: 48 cps
PAPER FEED: Friction feed
PAPER WIDTH: Up to A4
COLUMNS: 80
PRINT DIRECTION: Bi-directional
PRINT QUALITY: Letter quality

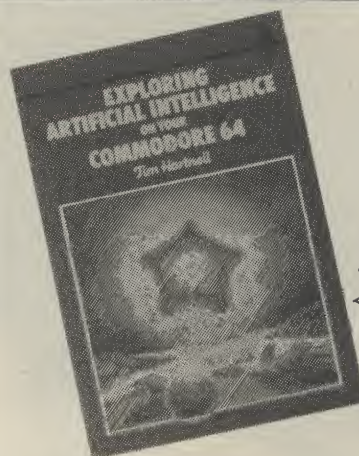
PRODUCT: Smith Corona TP1, £200
SUPPLIER: Smith-Corona (via dealers)

TYPE: Daisy Wheel
INTERFACES: Centronics or RS232
PRINT MATRIX: n/a
PRINTING SPEED: 12 cps
PAPER FEED: Friction feed
PAPER WIDTH: 12 ins
COLUMNS: 100
PRINT DIRECTION: Uni-directional
PRINT QUALITY: Letter quality

PRODUCT: Shinwa CPA 80, £220
SUPPLIER: Via dealers
TYPE: Dot matrix
INTERFACES: Centronics or RS232
PRINT MATRIX: 13x9
PRINTING SPEED: 100 cps
PAPER FEED: Friction and tractor feed
PAPER WIDTH: 9.5 ins
COLUMNS: 80
PRINT DIRECTION: Bi-directional
PRINT QUALITY: Dot matrix type

PRODUCT: Epson RX80, £220
SUPPLIER: Epson UK (via dealers)
TYPE: Dot matrix
INTERFACES: Centronics plus RS232 optional
PRINT MATRIX: 9x9
PRINTING SPEED: 100 cps (50 cps ultra quiet mode)
PAPER FEED: Tractor plus optional friction feed
PAPER WIDTH: 4-10 ins
COLUMNS: 80 (RX100 has 100 columns)
PRINT DIRECTION: Bi-directional
PRINT QUALITY: Near letter quality

MAKE THE MOST OF YOUR COMPUTER.



NEW!

- ☐ **Exploring Artificial Intelligence on your COMMODORE 64**
Tim Hartnell. £6.95
- ☐ **Mastering Machine Code on your Commodore 64**
Mark Greenshields. £7.95
- ☐ **Mastering the Commodore 64**
Mark Greenshields. £7.95
- ☐ **Challenging Games for the Commodore 64**
William A Roberts. £3.95
- ☐ **Putting your Commodore 64 to Work (15 programs, including a complete word processor)**
Chris Callender. £4.95
- ☐ **Putting your VIC 20 to Work**
Tom Lau. £4.95
- ☐ **50 Outstanding Programs for the VIC 20**
Tim Hartnell. £6.95
- ☐ **Delving Deeper into your VIC 20**
Philip Campbell. £4.95
- ☐ **Dynamic Games for your VIC 20**
Mathew Boek. £4.95
- ☐ **Creating Adventure Programs on your Computer**
Andrew Nelson. £4.95
- ☐ **The Art of Structured Programming**
Peter Juliff. £5.95
- ☐ **The Easy Way to Program your New Computer**
Tim Hartnell. £3.95
- ☐ **Getting Acquainted with your VIC 20**
Tim Hartnell. £6.95
- ☐ **How to Program the Commodore 64**
Robert Young. £5.95

These books are available from most book and computer stores. In case of difficulty, order directly from us.

Interface Publications, Dept. QC
9-11 Kensington High Street, London W8 5NP.

Please send me the indicated books. I enclose £ _____

Name _____

Address _____



Interface Publications Ltd

Interface

(TRADE ONLY: Interface Publications are distributed exclusively in the UK and Eire by W H S Distributors. Export trade handled by Interface Publications.)

A SPECIAL OFFER TO CBM 64 OWNERS



APPROVED
for use with
telecommunication systems
run by British
Telecommunications
in accordance with the
conditions in the
instructions for use

FREE SUBSCRIPTION TO PRESTEL & MICRONET

Purchase a Tandata complete communications package before 31st July, 1985,* and we'll give you a FREE subscription for 3 months to Prestel and Micronet.

You'll be able to enjoy up-to-the-minute news, comment, articles and reviews via Micronet 800 and Viewfax 258. Download computer programmes — many free of charge. Access all the other Prestel public databases. Communicate with other micros. And even carry out electronic messaging and mailing.

Tandata complete communication packages include a smart auto-dial modem and matching micropack with the appropriate software, cable and manual. In short, everything you need to convert your CBM 64 into a powerful Viewdata terminal.

TANDATA SMART AUTO-DIAL MODEMS

Features: Multi-baud rate (V21/V23); Auto-dial; Auto-recall; Auto log-on; Storage of up to 8 telephone numbers and IDs/passwords.

Tandata

Tandata Marketing Limited,
Albert Road North, Malvern, Worcs. WR14 2TL
Telephone: 06845 68421

MICROPACKS

Contain software in ROM cartridge. Features include: Full Prestel colour emulation; Prestel or message editor; Save to disk or cassette; File transmit; Telesoftware downloader; Print.

To take advantage of this limited offer, complete and return the coupon. We'll send full information and an application form.

Name _____
Address _____

Micro make/model _____

Send to: Tandata Marketing Limited, Albert Road
North, Malvern, Worcs WR14 2TL.

CU 5

* Subject to availability.

Prestel is a registered trade mark of British Telecommunications plc. Micronet 800 is the trading style of Telemap Ltd. and British Telecommunications plc.

SOUND AND VISION

Using the graphics and sounds commands on your
C-16 or Plus/4



The version of Basic (Basic V3.5) implemented on the C16 and Plus/4 gives you access to many powerful sound and graphics commands, which let you create some quite spectacular effects quickly and easily without having to resort to machine code or endless POKE statements.

There are two programs accompanying this article. The first, **Sketchpad**, makes use of the C16/Plus4's high resolution screen and can be used to draw designs on the screen made up of lines, circles, polygons, etc. The second program, **Effects**, is really a subroutine library. It contains a number of sound effects from an everyday domestic telephone to the sound Martian spaceships will undoubtedly make when they land on Earth — you heard it first on the C16!

It may help you to understand how the programs work if you read the relevant sections in the user manual, specifically, those that refer to high resolution graphics and sound.

GRAPHICS

Type in the **Sketchpad** program and save it in the usual manner. Then run the program (to do this the quick way just press SHIFT F3). The screen should clear and you will see a black flashing cursor, slightly smaller than the usual one in the top left hand corner. This can be moved around the screen using the cursor control keys.

Commodore 16 owners may feel a little let down in the prestige stakes because their favourite machine has a meagre 16K of memory. But there's one thing you can be proud of, the new version of Basic, which gives sound and graphics commands previously unavailable on Commodore machines. Ken McMahon has used them to provide you with two programs, 'Sketchpad' and 'Effects', which illustrate the uses they can be put to in your own programs.



If it travels a little slowly for your liking don't worry, I'll show you how to speed it up later. Now is probably a good time to explain the other important keys and their functions:

- O-plots the origin of a line or shape
- D-plots the destination of a line or shape
- L-draws a Line from Origin O to Destination D
- B-draws a Box with its opposite corners at O and D
- C-draws a circle within an imaginary box with its

opposite corners at O and D

P-Paints an area from the cursor to any boundary which is not background colour

A-enables you to Alter certain parameters, namely cursor speed and colours

SHIFT/CLR-clears the screen

The program runs in multicolour mode which basically means you have three colour sources to choose from when drawing and painting shapes. The

default colours are:

- Colour 0 (background colour) = cyan
- Colour 1 = black
- Colour 2 = yellow
- Colour 3 = blue
- Colour 4 = (border colour) = purple

Colours 1 and 2 can be changed without affecting anything you have already drawn, theoretically allowing you to use all the colours available on one screen. However, altering colour 3 will result in changing anything previously drawn in that colour to the new colour.

Using Sketchpad

To give you an idea of how the program works, try the following. Move the cursor to a point somewhere in the top left quadrant of the screen and then press 'O'. Now move the cursor to a point below and to the right of its original position and press 'D'. To draw a box press 'B' and you will be prompted with COLOUR SOURCE (1-3): Enter 1 and press RETURN and you will next be asked for the ROTATION in degrees. As we do not want to rotate the box simply pressing Return results in a black box being drawn on the screen with its opposite corners at 'O' and 'D' respectively.

To draw a circle in the same place press 'C'. Once again you will be asked the same sort of questions including some new ones. START ANGLE and END ANGLE permit you to specify where the circle will begin and end thus making it possible to draw arcs. DEGREES BETWEEN SEGMENTS makes it



possible to draw polygons. To calculate the figure simply divide 360 by the number of sides required. For example to draw a triangle enter 120.

By now, you should be getting the hang of it. For some interesting effects try drawing the same boxes and ellipses in different colours each with different degrees of rotation and painting the gaps in between.

For those of you who want to know how the program works, look at the panel for a line-by-line description.

Before I go on, here's one word of warning (cue sirens). In a program of this kind it is usual to incorporate a few error trapping devices in case someone does something unexpected and the thing hangs up on you after several hours mind-bending composition don't panic. Break out of the program by pressing the RUN/STOP key then type in some garbage and press RETURN. This will cause a syntax error and the computer will return to text mode. Now type GOTO 100 and you should pick up where you left off.

SOUND EFFECTS

Once you've tired of playing around with graphics you'll probably be ready for some aural stimulation. The second program, **Effects**, is really a number of programs, or sub-



routines in one. I've chosen to concentrate on special sound effects rather than music for a couple of reasons.

Firstly, there are a number of programs in computer books and magazines which will enable you to turn your C16 into a poor cousin of the piano. There are even a couple in the Commodore Manual. Personally I think a piano is much better cut out for the job. Sound effects are much more fun and the C16 produces them as well as anything else I know of. Try getting your old upright to

SOUND AND VISION

sound like an alien spacecraft. The second reason you may by now have gathered is that I know nothing about music.

Notes and noises

To get a noise or note out of your machine you need to know about the VOL and SOUND commands. VOL not surprisingly stands for VOLUME. Maximum volume is achieved by setting VOL8 and minimum volume (silence) by setting VOL0.

Sound is a bit more complicated in that it has three parameters, lets call them x, y and z. The format of



the sound command is therefore SOUND x,y,z.

Taking them in alphabetical order, x is the voice. The C16 has two voices both of which can produce sound at the same time. Paradoxically, x can take any integer value between 1 and 3. This is because voices 2 and 3 are one and the same. Confused? Don't be. It's really quite simple. When you call it voice 2 as in SOUND 2,y,z voice 2 produces a note. However, if you type SOUND3,y,z voice 2 produces white noise. To hear some white noise type in SOUND3,700,120. The important thing to remember is that you can't use voice 2 and 3 together. So much for voice.

The pitch of your note or noise is determined by y, and it can have any integer value from 0 to 1015. Put simply the higher the value of y, the higher the pitch or frequency of your sound. Although it isn't too important for effects if you want to produce actual notes you can do this by referring to the table in the user manual.

Finally, z determines the length of the sound in sixtieths of a second and can



have any integer value from 0 to 65535. Hence SOUND x,y,60 will produce sound for one second and SOUND x,y,65535 will give about fourteen minutes of it.

The Effects program

Now you know the lot, you're ready to start making your own sound effects. First type in the **Effects** program and save it. On running it you will be prompted with a question mark. Enter 1 and press RETURN and the title LASER CANON should appear on the screen accompanied by the sound effect. If you can't hear anything, turn up the volume on your telly. There are nine special effects in all, each lasting about ten seconds and accessed by entering 1 to 10 in response to the prompt.

When you've listened to them all a couple of times you will probably want to start creating some of your own.

The best advice I can give is to take a look at the listing and try to understand how the changing variables alter the final sound. Most of the subroutines employ FOR NEXT loops both to alter pitch (the y variable) and the duration (z), and also as a means of implementing delays.

Try substituting your own values in the routines to see how it affects the final result. To add new routines to the library start at line 1100 and put each subsequent routine at intervals of 100. Don't forget to end each one with a RETURN.

As it stands, the program will hold twenty subroutines in all, but you don't have to be a genius to alter it so that it can accommodate more. Above all, experiment. Remember, the most unlikely combinations make the most unusual effects. Go on, impress your friends. □



Line	Description
10	sets hi-res multicolour mode and clears the screen
20-25	initialises variables and sets default colours
30	sets up a string to contain keyboard options
100-210	moves and draws cursor
210-230	finds the position of the key pressed (A\$ string) in the options string (IN\$) and branches to appropriate subroutine
1000	sets origin
2000	sets destination
3000-3030	draws a line
4000-4040	draws a box
5000-5110	draws a circle. First the width (XRAD), height (YRAD), and centre coordinates (CX,CY) are calculated. Then the user is asked to input the other parameters in lines 5050-5090.
5100	actually draws the circle
6000-6030	paints an area around the current cursor position to any boundary which is not background colour
7000-7320	first prints the variables containing cursor speed (CS), all four colours (C0-C4), and luminescence levels (L0-L4), then changes them according to user input
8000	clears the screen

SOUND EFFECTS

```

10 PRINT"Q"
20 VOL% INPUT N
30 IF N>10 THEN50
40 ON N GOSUB100,200,300,400,500,600,700
,800,900,1000:GOTO20
50 ON(N-10)GOSUB1100,1200,1300,1400,1500
,1600,1700,1800,1900,2000:GOTO20
100 REM ***** LASER CANON *****
105 PRINT"*****LASER CANON*****"
120 FOR N=1 TO 5
130 FOR S=1000 TO 940 STEP-5
140 SOUND3,S,5
150 NEXT S,N:RETURN
200 REM ***** RED ALERT *****
205 PRINT"*****RED ALERT*****"
210 FOR N=1 TO 5
220 SOUND3,1000,30
230 SOUND1,917,15
235 SOUND1,952,15
250 NEXT N
250 RETURN
300 REM ***** RIGHT ANSWER! *****
305 PRINT"*****RIGHT ANSWER!*****"
310 FORN=1 TO 5
320 SOUND1,700,6
330 SOUND1,350,6
340 NEXT N
350 RETURN
400 REM ***** WRONG ANSWER *****
405 PRINT"*****WRONG ANSWER!*****"
410 SOUND1,100,30
420 FORN=1 TO 100:NEXT N
430 SOUND1,1,90
440 RETURN
500 REM ***** TELEPHONE *****
505 PRINT"*****TELEPHONE*****"
510 FOR A=1 TO 5:FOR B=1 TO 2:FOR C=1TO1
520 SOUND1,800,1:SOUND1,900,1
530 NEXTC
540 FOR D=1 TO 100:NEXT D,B
550 FOR D=1 TO 600:NEXT D,A
560 RETURN
600 REM ***** MARTIAN LANDING ****
605 PRINT"*****MARTIAN LANDING*****"
610 FOR N=1 TO 20
620 FOR V=1 TO 10
630 SOUND1,(100+(V*50)),1
640 NEXT V,N
650 RETURN
700 REM ***** ALARM *****
705 PRINT"*****ALARM*****"
710 FOR N=1 TO 5
720 FOR V=100 TO 800 STEP 100
730 VOL (V/100)
740 SOUND1,V,1
750 NEXT V
760 SOUND1,V,30
770 FOR V=300 TO 100 STEP -100
780 VOL (V/100)
790 SOUND1,V,1:NEXT V
795 FOR D=1 TO 100:NEXT D,N
796 RETURN
800 REM ***** RACING CAR*****
805 PRINT"*****RACING CAR*****"
820 FOR N=1 TO 300
830 SOUND1,N,0
840 NEXT
850 FORN=1TO1000
860 SOUND1,300,0
870 NEXT
880 RETURN
900 REM ***** WARBLE *****
905 PRINT"*****WARBLE*****"
910 FOR N=1 TO 200
920 A=700+INT(RND(0)*300)
930 SOUND1,A,1:SOUND1,(A-100),1
940 NEXT N
950 RETURN
1000 REM
1010 RETURN
1020 FORD=1 TO 10:NEXT D,N
1030 GOTO1000

```

SKETCHPAD

```

10 GRAPHIC4,1
20 X=10:Y=10:CS=3:X1=X:X2=X:Y1=Y:Y2=Y
25 COLOR0,4:COLOR1,1:COLOR2,8:COLOR3,6:COLOR4,7
30 IN$="ODLEBCPAQ"
100 DO
105 LOCATE X,Y
110 K=RDOT(2)
120 IF K=0 THEN DRAW1,X,(Y-1)TOX,Y:ELSE
DRAW0,X,(Y-1) TO X,Y
130 FOR N=1 TO 50:NEXT
140 DRAWK,X,(Y-1) TO X,Y
150 GET A$:LOOP WHILEA$=""
160 X=X-CS*(A$="B")+CS*(A$="I")
170 Y=Y-CS*(A$="D")+CS*(A$="Q")
180 X=X+160*(X>159)
190 X=X-160*(X<0)
200 Y=Y+160*(Y<0)
210 Y=Y+160*(Y>159)
220 Z=INSTR(IN$,A$)
230 ON Z GOSUB 1000,2000,3000,4000,5000,
6000,7000,8000
235 PRINT"Q"
240 GOTO100
1000 FORN=1TO12
1010 PRINT360/N
1020 NEXT
2000 X2=X:Y2=Y:RETURN
3000 PRINT"*****"
3010 INPUT"COLOR SOURCE(0-3):";CLX
3020 DRAW CLX,X1,Y1 TO X2,Y2
3030 RETURN
4000 PRINT"*****"
4005 ROTX=0
4010 INPUT"COLOR SOURCE(0-3):";CLX
4020 INPUT"ROTATION 0-360:";ROTX
4030 BOXCLX,X1,Y1,X2,Y2,ROTX
4040 RETURN
5000 PRINT"*****"
5010 XRAD=(X2-X1)/2
5020 YRAD=(Y2-Y1)/2
5030 CX=X1+XRAD
5040 CY=Y1+YRAD
5050 INPUT"COLOR SOURCE";CLX
5060 SA=0:INPUT"START ANGLE(0-360):";SA
5070 EA=360:INPUT"END ANGLE(0-360):";EA
5080 ROTX=0:INPUT"ROTATION(0-360):";ROTX
5090 DBS=2:INPUT"DEGREES BETWEEN SEGMENT
S";DBS
5100 CIRCLECLX,CX,CY,ABS(XRAD),ABS(YRAD)
,SA,EA,ROTX,DBS
5110 RETURN
6000 PRINT"*****"
6010 INPUT"COLOR SOURCE(0-3):";CLX
6020 PAINTCLX,X,Y,1
6030 RETURN
7000 PRINT"*****"
7010 C0=RCLR(0):C1=RCLR(1):C2=RCLR(2):C3
=RCLR(3):C4=RCLR(4)
7020 L0=RLUM(0):L1=RLUM(1):L2=RLUM(2):L3
=RLUM(3):L4=RLUM(4)
7100 PRINT"CURSOR SPEED ";C0
7110 INPUT C0
7120 PRINT"BACKGROUND COLOR=";C0
7130 INPUT C0
7140 PRINT"LUMINANCE=";L0
7150 INPUT L0
7160 PRINT"CHARACTER COLOR=";C1
7170 INPUT C1
7180 PRINT"LUMINANCE=";L1
7185 INPUT L1
7190 PRINT"MULTI COLOR 1=";C2
7200 INPUT C2
7210 PRINT"LUMINANCE=";L2
7220 INPUT L2
7230 PRINT"MULTI COLOR 2=";C3
7240 INPUT C3
7250 PRINT"LUMINANCE=";L3
7260 INPUT L3
7270 PRINT"BORDER COLOR=";C4
7280 INPUT C4
7290 PRINT"LUMINANCE=";L4
7300 INPUT L4
7310 COLOR0,C0,L0:COLOR1,C1,L1:COLOR2,C2
,L2:COLOR3,C3,L3:COLOR4,C4,L4
7320 RETURN
8000 SCNCLR:RETURN

```


THE SMASH HIT COMPUTER GAMES PACK



SPECTRUM 48K

TAPE A

3D STARSTRIKE (Realtime Software)
BLUE THUNDER (Elite)
SON OF BLAGGER (Alligata)
AUTOMANIA (Mikro Gen)
BUGA-BOO (Quicksilva)

TAPE B

PSYTRON (Beyond)
WHEELIE (Microsphere)
FALL GUY (Elite)
BLADE ALLEY (P.S.S.)
PENETRATOR (Melbourne House)



COMMODORE 64

TAPE A

TALES OF THE
ARABIAN NIGHTS (Interceptor Micros)
POSTER PASTER (Taskset Ltd.)
FLIGHT PATH 737 (Anirog)
PSYTRON (Beyond)
SON OF BLAGGER (Alligata)

TAPE B

SUPER PIPELINE (Taskset Ltd.)
TROLLIE WALLIE (Interceptor Micros)
AUTOMANIA (Mikro Gen)
GHOULS (Micropower)
BOOGA-BOO (Quicksilva)

AVAILABLE AT:

W H SMITH BOOTS MENZIES F W WOOLWORTH GREENS RUMBELOWS LASKY'S CURRY'S H.M.V. ASDA TESCO
GRANADA CO-OP TIGER DEALERS AND ALL GOOD COMPUTER SHOPS

Telesoftware sense

At long last, someone has done something to remedy the daft situation regarding use of Micronet telesoftware with the Compunet modem. And all credit goes to — Micronet. If you are a Compunet user, you may have downloaded the program called *Viewdata*, which allows your Compunet modem to link up with Micronet. Although this allows you to view the Micronet database, it does not let you download most Commodore 64 telesoftware from Micronet. However, Micronet have published a program which replaces *Viewdata*, and that will let you use Micronet to its full potential on your Compunet modem — including the telesoftware.

The program, called **Commodore 64 Terminal**, is free and works with both cassette and disk systems. You download it with a Compunet modem and *Viewdata* program (it's one of the few programs that does actually download with the Compunet software) and, from then on, use the Micronet version instead of the Compunet one. As well as allowing you to download Micronet software, *Terminal* also has the following features:

- **Printer type** — Any ASCII printer can be used to print out the text from Prestel frames. An Epson or Kaga printer will print full graphics dumps. The software also supports Centronics printers connected via the user port.

- **Offline mailbox editor** — used to edit frames on disk or in RAM. Editing controls include full insert and delete facilities, and colour codes. The frame can then be sent to Prestel.

Logging on is the same as with the Compunet *Viewdata* program. The Micronet version, though, also features a call timer which will tell you how long you've been using the phone. A help page is also there, to remind you what all those keys do. Pressing f2 will give a directory of a disk while you're online, though with the speed of the 64 disk drive it may increase your phone bill.

The downloader will now download complete Commodore 64 programs straight to tape or disk.

In addition to sending mailboxes which have been prepared offline, whole files can also be sent. Files can be normal ASCII or Commodore ASCII. Even a frame held in RAM can be sent, to save loading it from tape or disk. The program was written by Y2 *Computing* and occupies a full 71 frames, so make sure that you have enough space on your disk to save it. Full details from Micronet on 01-278 3143 or, if you're a member, see page 700690.

Look — no micro!

If you use a *Miracle Technology*



by Robert Schifreen

Want to contact the Happy Hacker? He's on Prestel page 6001880. Or you can leave a message for him on the VISA Prestel-standard bulletin board, between 8am. and 11pm. on 01-958 7098. No good? How about American People/Link, using the 'Hex Maniac' ID, or Compuserve, using 74106, 1637? Failing all that, you could just write to him at: Commodore User, 30-32 Farringdon Lane, London EC1 3AU.

modem with your 64 to access Micronet, you may already have everything you need to set up the crudest Bulletin Board possible! Providing you have the auto answer board in your modem, and that you have a printer with an RS232 interface.

What's more, the system won't tie up your 64. Just plug the output from the modem (the RS232 lead) directly into the printer. That's it. Anyone with suitable software can call your board. The modem will answer the phone, and everything they type will be sent straight to the printer. Well, I told you

it was crude, but it works.

If you happen to know of any real Bulletin Board software for a Commodore micro, or can recommend an existing board with useful information for Commodore owners, let me know.

Celebrity Chatline

Micronet's publicity department has been springing into action again this month to bring the world **Celebrity Chatline**. The Chatline service itself is operated by Micronet and allows subscribers to send a message via Prestel, which is automatically published on the system within around two minutes. Others can then read the message and supply suitable replies or comments. Following the success of the venture (Chatline's accesses are second only to Micronet itself), Editor Babsky has come up with *Celebrity Chatline*.

David will be visiting the homes of celebrities, modem in hand. The idea is that Micronet's subscribers can conduct the first ever live interview on Prestel. Victims lined up include the producer of "4 computer buffs", Michael Feldman, Derek Meakin of Database Publications, micro journalist Guy Kewney, Mike "Lords of Midnight" Singleton and Paul Duffy from GOSH.

Hacking in the USA

You may have read recently about a Los Angeles Bulletin Board operator accused of publishing the numbers of stolen credit cards on his system. Last month, the case against 34-year-old Thomas Tcimpidis was dropped, probably through lack of evidence. The reason for the worldwide interest is that it was a caller who had posted the numbers on the board, yet the Sysop (system operator) was held responsible. Tcimpidis is still operating the board, despite advice from his Attorney.

Meanwhile, an American high school student found himself in deep water last month, when he was caught trying to crack Stanford University's computer system. According to the computer's records, the student made 460 calls to the system over one weekend, in an attempt to crack the eight-character password. His idea was to change his classmates' exam marks, and charge them \$100 a time.

OEL OK?

Finally, modem makers OEL have been having a rough time recently. Stories circulating at the time of writing (late March) suggest that the company has gone into receivership. OEL make the Micronet cartridge for the 64 and are also about to release their comms system for the Sinclair QL. More news as we have it. Meanwhile, this is HH saying BFN. □

What's on Micronet and Compunet

Extend your Basic

Unlike most other extended Basic packages Breden's Basic from *Visions* includes both disk and cassette versions as standard. This is obviously a great advantage for someone currently using cassette software but contemplating upgrading to disk at some future date. With Breden's Basic installed you have 29695 Basic Bytes free. The manual is of the now almost legendary spiral-bound variety but with very important differences. The cover is made from a heavy duty cardboard and the inner pages from paper which does not curl up at the edges after repeated use.

Breden's Basic is a very well presented package which covers all areas of programming. The manual devotes one page to each of the 125 extra commands available. These include over 40 graphics commands, 11 of which are concerned with the creation and manipulation of sprites.

Another area well catered for is that of sound control; that is, easy access to the 64's SID chip and all its facilities. Twenty-two commands are included to make SID that bit 'friendlier' with the manual detailing the correct syntax for each command. A 'HELP' command is useful for showing up any errors and the 'HLIGHT' command highlights (in reverse field) any Breden's Basic command when listing to the screen or printer.

However, the dedicated programmer might be a bit disappointed by several omissions. No 'auto line numbering' or 'renumber' facilities are included which for the user who taps in a lot of his own programs is a very serious deficiency. Although Breden's Basic is an excellent package in most respects, at the high price of £39.95 I would expect it to be perfect. It's available from: CSM Ltd, Suite 38, Strand House, Great West Road, Brentford, Middx (01-560 4191).

Supabasic from *Interceptor Micros* is an altogether more modest attempt at making up for the deficiencies resident in Commodore Basic, adding 72 additional commands. This is not to dismiss it immediately since at the lower price of £9.99

(cassette or disk) it cannot be expected to compete on facilities.

The manual is a 40 page booklet (not spirally bound) which although considerably smaller than that supplied with Breden's Basic does appear to contain all the information necessary to use Supabasic to its full.

There are 28 graphics commands, almost half of which are used for sprite creation and manipulation. Sound control seems less well sup-

ported with only five commands; but the degree of control of the 64's SID chip is still quite impressive and certainly considerably easier than using endless 'POKES'. As with Breden's Basic there is no 'auto line numbering' facility, but a 'renumber' command has been included. However, its use is severely restricted since it will not automatically renumber 'GOTOS' and 'GOSUBs'. Its inclusion as a serious programming 'aid' is therefore

questionable.

With 30719 Basic bytes free for program use with Supabasic installed, the package gives a good set of extensions to Commodore Basic. At its price it represents good value for money. *Interceptor Micros* live at Lindon House, The Green, Tadley, Hants (07356 71145).

Our third extended Basic is from *Mushroom Software*. What separates their attempt from those already on offer

UTILITIES FOR ALL

Recent utilities for the Commodore 64

The Commodore 64 gets older by the day, but new utility software keeps on appearing for that stalwart machine, especially extended Basic programs. We've rounded up three recent offerings: Breden's Basic, Supabasic and Mushroom's Extended Basic. For machine-code boffins, we've gathered together the latest Assemblers from Merlin and First Publishing. Or how about a Spectrum simulator or a fast disk compiler?

by Steven Jedowski

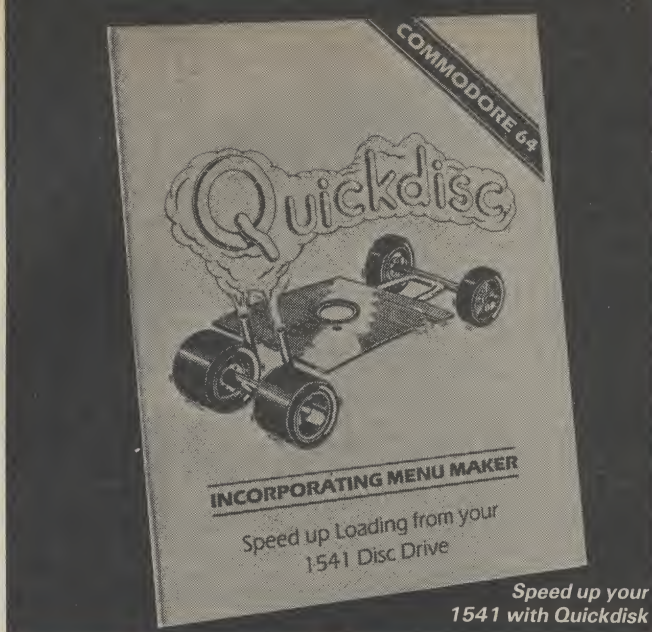


from Visions (Breden's Basic) and Interceptor Micros (Supabasic) is the inclusion of an assembler. This brings it into line with machines like the BBC Micro which has a modern dialect of Basic and a machine-code monitor/assembler built in as standard facilities.

The program is considerably longer than either Breden's Basic or Supabasic, being 16K in length although only 2.5K is taken away from the 38K available to Basic on power up; leaving a healthy 35.5K for program use. It includes 51 extra commands, 10 extra control codes and a 2/3 pass assembler.

The manual comprises a 60 page booklet which would not win prizes as a work of art but all the necessary information is included with one page dedicated to each of the available commands. However, after a few hours extensive use the pages were already curling at the edges.

Graphics and sound are again well catered for although the format of the commands differs from those adopted in the other Basic Extension packages. Programmers can raise a cheer since



'auto line number' and 'renumber' have been fully implemented.

The inclusion of an assembler is a bonus for anyone thinking about entering the world of machine-code programming. But beware, this package is not a beginner's guide to machine-code and makes no attempt to introduce the subject although the assembler is fully explained for those who have some knowledge of writing in assembly language. For those

not so versed there are many good books available on introducing machine-code programming.

The package at £19.50 (cassette) and £21.50 (disk) represents very good value for money and would make a worthwhile investment even for someone not currently needing an assembler. Mushroom Software are at 193 Rommany Road, London SE27 9PR (01-670 3533).

Assemblers assembled

Fassem from Merlin Software is an Assembler/Disassembler for the 64 with its own 'mini-Basic' included. These consist of useful toolkit functions such as Renumber, Auto Line Number, Delete and Disk commands. In fact, Fassem claims to be the fastest machine language assembler of its kind available. Limited tests proved that it was definitely fast but speed only really becomes a problem when working with large programs, so for many people the speed advantage may not be that important.

The assembler source code is entered in much the same way as you would enter a Basic program: using line numbers. Standard 6510 mnemonics are used and no spaces are required between mnemonics or operands. As in Commodore Basic multi-statement lines are allowed although the manual correctly points out that single statement lines are easier to read and correct at a later stage if necessary.

The manual supplied with Fassem is a 12-page cassette-sized booklet which, although adequate, is not that 'friendly' and therefore not really suitable for the novice. There

is also a character editor included which allows two different character sets to be defined at the same time.

Fassem is available on cassette or disk at £14.95. It's produced by Merlin Software who can be contacted at Bessemer Drive, Stevenage, Herts (0438 316561).

Another development package for the 64 is **Assembler Monitor 64** from First Publishing. Unlike Fassem the manual supplied is substantial, both in size and content, comprising 37 pages in a neat small ring binder. The text shows some signs of its German origin but this is not really obvious. The package comprises two programs, the Assembler and the Monitor, and each can be loaded independently or used concurrently.

The Assembler is 8K in length and leaves 30717 bytes when installed. The Assembler protects itself from being overwritten by Basic. Assembler 64 uses the MOS standard of source format although there are some differences which are fully explained in the manual. The Instruction Manual is not intended to act as a 6510 Assembly Language Tutorial although there is a lot that can be learned by reading its pages. There is a very useful section on Macros and their use complete with demonstration programs.

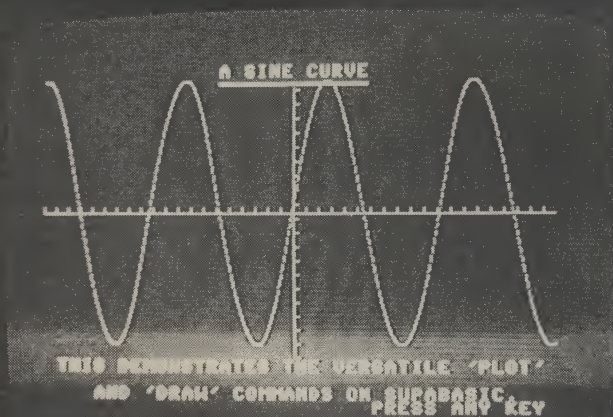
The Monitor program provides the normal facilities expected of such a utility and, like the Assembler, is also well documented. It can run independently or concurrently with the Assembler and together make a very good machine-code development package.

Unfortunately, this program is only available on disk at £19.99. It's produced by First Publishing, Unit 20B, Horseshoe Road, Horseshoe Park, Pangbourne, Berks (07357 5244).

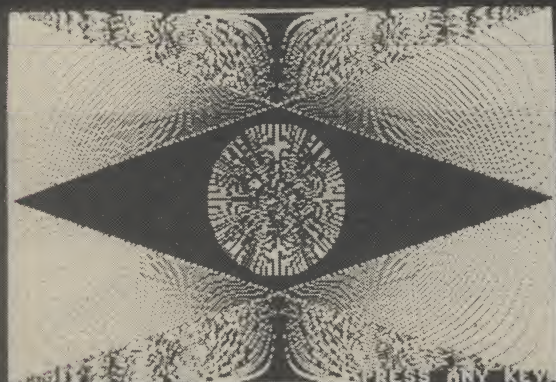
Exmon 64 is another product from Interceptor Micros. As its name implies it is an extended machine-code monitor for the 64. A six page booklet explains the facilities provided. These are the normal 'Monitor' facilities but with some interesting calculator functions particularly useful for those not used to working in hexadecimal.

Hex to decimal and

Supabasic's 'demo' mode shows how plot and draw commands can be used



Another graphic demonstration on Supabasic



UTILITIES FOR ALL

decimal to hex converters are provided and so are functions to calculate hex offsets and carry out addition and subtraction in hex. This makes the Monitor a handy tool for the beginner.

At £7.99, Exmon 64 represents good value for money. See above for Interceptor's address.

Simulate the Spectrum

Have you ever wanted your Commodore 64 to act like a Spectrum? If this has ever been your sole desire, then *Whitby Computers* have now answered your prayers. **Spectrum Simulator** allows your 64 to be transformed into a Spectrum. Fortunately this does not include the transformation of the Commodore's 'real' keyboard into the Spectrum's 'soggy' variety. But all other facilities are supported including the Spectrum's one key entry.

The Simulator will run virtually any program written in Spectrum Basic without modification except where the program makes use of machine-code calls from within the Basic program (the Spectrum **USR** command). With the Simulator loaded into memory you have about 30K bytes to store your Basic programs or load programs written in Spectrum Basic. As

already noted, no programs written partly or totally in machine-code will load so many commercial Spectrum programs will not run with this simulator.

One of its main benefits is that it gives the 64 a version of Basic which is a bit friendlier than Commodore's own. However, it depends on your opinion of Spectrum Basic; if you progressed from a Spectrum to a 64 then you will feel at home. If you feel the need for a better version of Basic, then a Basic Extension package will probably serve you better.

Whitby Computers have come up with a product which has a curiosity value rather than a definite practical use. Available at

£14.95 on cassette, it will doubtless find an audience amongst those eager to explore other worlds. Whitby is at 8 Chubb Hill Road, Whitby, N Yorkshire (0947 604966).

Disk utilities

The last two items in our round-up are only available on disk. The first of these is a compiler from Stack Computers and the second is a Fast Disk Utility from the same stables as Disco (tape to disk utility) which gives patient 1541 disk drive users a much needed boost.

The **Mini-Blitz Compiler** is a disk-based program for the 64. That's nothing new; what is new is the price, which at £9.99 must be the cheapest compiler for the 64 currently

these extensions may be forced by preceding them with a pair of colons. The whole compilation process takes two passes but the compiler does all the work and you are left with the compiled version of your program.

Note that after compilation the program name is preceded by a 'C/' prefix so one program which then loads another compiled program will have to take account of the amended program name.

Mini-Blitz works very well and is recommended to any disk drive user who has not already added a compiler to their software library. Although Stack is no longer trading, its products are still available in the shops.

Quickdisk 2 is a fast disk utility for the Commodore 1541 disk drive, which claims to speed up operations by four to five times. The main disadvantage, before you all rush out and buy one, is that it will not work with all commercially available software. *Micro Centre*, who market this *Softsel* production, are quite honest in admitting its limitations. As a general rule heavily protected software will not like Quickdisk.

Apart from the quick loading system, which consistently loaded software up to four times faster than normal, there are several other useful utilities included; the most interesting is *Menu Maker* which allows you to create a menu of programs on the disk and then by the selection of the appropriate numerical key load the program. This can be used with or without the quick load system.

The disk also includes a program to convert programs previously saved with *Disco* (*Softsel*'s tape to disk utility) to work with Quickdisk. *Disk Trainer* claims to be a useful utility for checking the efficiency of your disk drive. Any faults isolated by this program would probably become immediately apparent through programs (including disk trainer itself).

Quickdisk 2 which, unlike Quickdisk 1, allows the use of a printer or a second disk drive, is a most welcomed utility for the 1541 user. At £11.95 no 1541 user ought to be without one. *Softsel* are at *Softsel House, Central Way, North Feltham Trading Estate, Feltham, Middx (01-844 2040).*



Top: simulate Spectrum Basic with your 64 with this package from Whitby. Left: FasseM claims to be the fastest assembler of its kind

available. The program translates Basic program files into a special p-code which will be executed many times faster than the original Basic program.

This is particularly noticeable with programs involving graphics where any allowance for the speed increase will have to be made in the original Basic program prior to compilation.

Mini-Blitz will recognise many extensions to Basic itself. If it fails to do so then

For easy graphics entry.. just enter your name here.



Weigh up the pros and the cons; if you return the coupon we'll send you full details of The Touchmaster Graphic Tablet. Explain how easy it is to generate graphics more sophisticated than you could have ever hoped for. And show you how The Touchmaster can make a significant contribution to your software development capabilities.

On the other hand if you don't return the coupon you'll have a spare envelope to draw on!

To: Touchmaster Limited, FREEPOST,
Port Talbot, West Glamorgan SA13 1ZZ.
Please send me free Touchmaster literature

Name _____

Address _____

Make of
Computer _____

CU5/85

TOUCHMASTER

Touchmaster Limited, PO Box 3,
Port Talbot, West Glamorgan SA13 1WH.



Already before its scheduled UK launch in June, the C-128 is stimulating claims that it's really three computers in one, that it's the 64's natural successor and that it will bridge the gap between home and business computing. Commodore can hardly contain its corporate excitement and neither can anyone else who's actually seen the machine. Raeto West has seen and used one of the rare pre-production models. Here's his considered report.

by Raeto West

THE COMMODORE 128

AN EXCLUSIVE

Considering that the computer market is becoming saturated with currently available styles of computer, and that the C-16 and Plus/4 were ill-planned and initially ill-received, there's more pressure than ever on Commodore to make its new C-128 a resounding success.

It's more than likely that the machine will be assembled (if not manufactured) in the UK, as soon as its pre-production problems have been ironed out. At the time of writing, a final specification had been worked out to be implemented for eventual production. What follows is provisional to the extent that Commodore UK has not, as yet, received a final working model.

Exterior looks

At first glance the C-128 looks like a business computer, with its slim, gently sloping keyboard and de rigueur porridge-cream colour. There's a whole load of keys

keypad and a full set of cursor and function keys. But home computer buffs will also find the familiar Commodore graphic symbols in their usual place — on the vertical side of the keys. The Commodore key hasn't been forgotten either. There's sense in all this, since the 128 acts like a 64 in one of its modes.

Round the side, there's two D-type joystick ports, power on/off switch and the power socket — just like the 64. But the mains transformer is bigger than ever, not unlike a brick, in fact. There's a reset switch too, the operation of which is yet to be finalised since it's 'warm-start' facility can aid illegal copying of protected software.

Moving round to the back, there's nothing really new. From right to left, there's the cartridge port, cassette port, serial port, audio/video port, TV socket and user port. The only addition to the 64 layout is the RGB monitor output. More about that later.

Now that you've looked round the machine, let's plug

it in. The 128 works in three modes: 64 mode, 128 mode and CP/M mode. In the latter two modes you can work with a 40 or 80 column screen — so that gives you five modes in all.

Commodore 64 mode

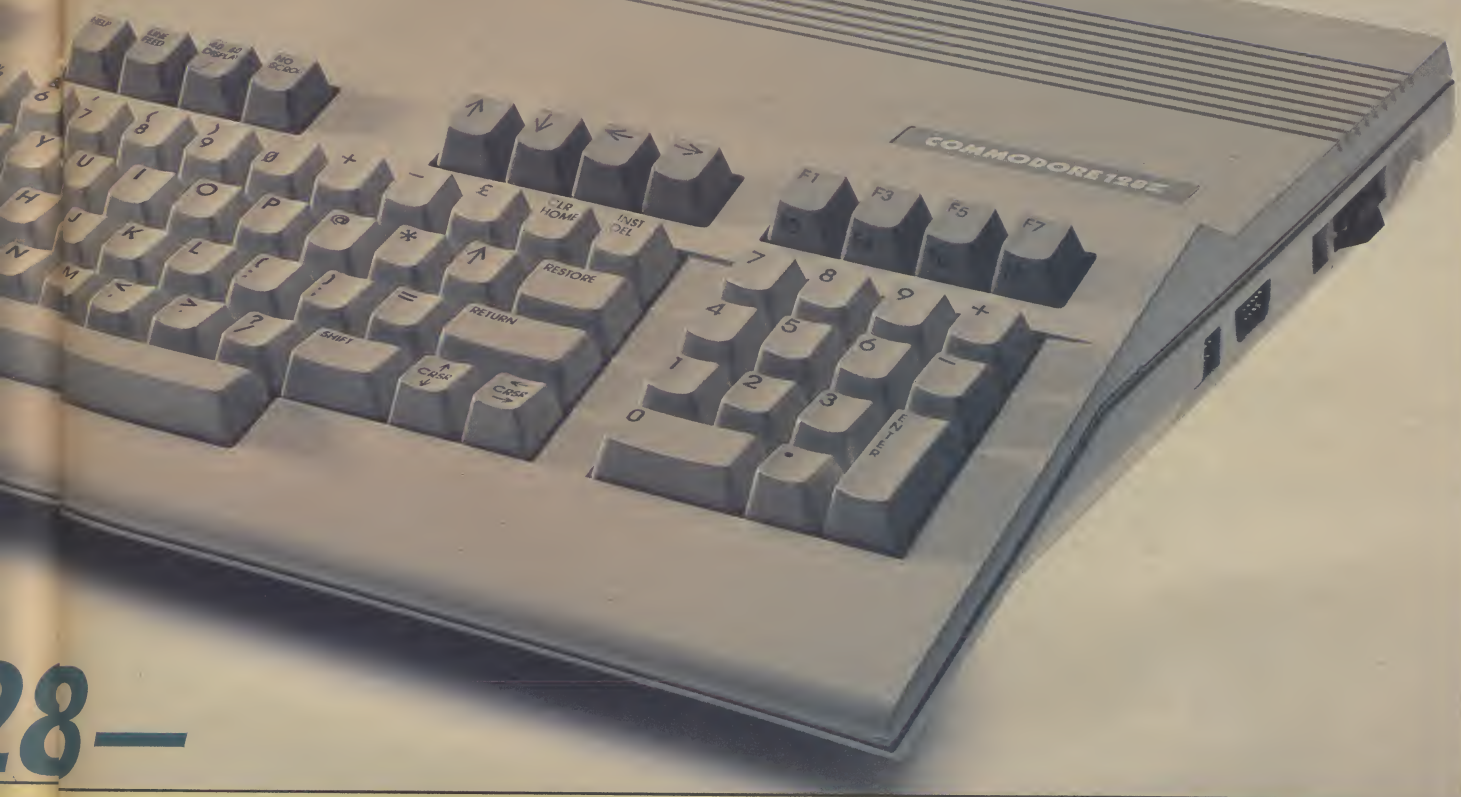
After the 64's huge worldwide success, Commodore has decided (for the first time) to go for a genuine upgrade. Virtually all 64 software will run on the 128, whether it's on cassette, disk or cartridge. Although the machine powers up in 128 mode, entering **GO 64** switches to 64 mode. From that point, you're working with what amounts to a real 64. Once in this mode, you can't get out again without turning the machine off.

All the 64's keys are here, including extra keys like **HELP**, **TAB**, **ESC AND CAPS LOCK**. The **VIC** and **SID** chips, user port, joystick and lightpen connections have all

been carried over. Although, virtually all 64 software will run, exceptions seem to be programs which use 'illegal' or undefined opcodes, which presumably work slightly differently on the 8502 chip, and some rare programs which use calls to the 64's old ROMs (those don't work on all 64s anyway). Moreover, you won't get an 80-column display or access to the extra memory in 64 mode.

On the Basic front, Commodore must have had to decide whether to make 64 and 128 Basic compatible, in the sense that simple Basic programs without **POKEs** or other very specific commands could be made to work on either. At the time of writing, though, I don't know whether 64 keywords are stored as a subset of 128 keywords. If they are, simple Basic programs would look the same in the 128's 40-column mode as in 64 mode, but programs in-

EXCLUSIVE



28—

EXCLUSIVE PREVIEW

corporating 128 keywords would LIST oddly in 64 mode and, of course, not work. We'll wait and see.

The 128 mode

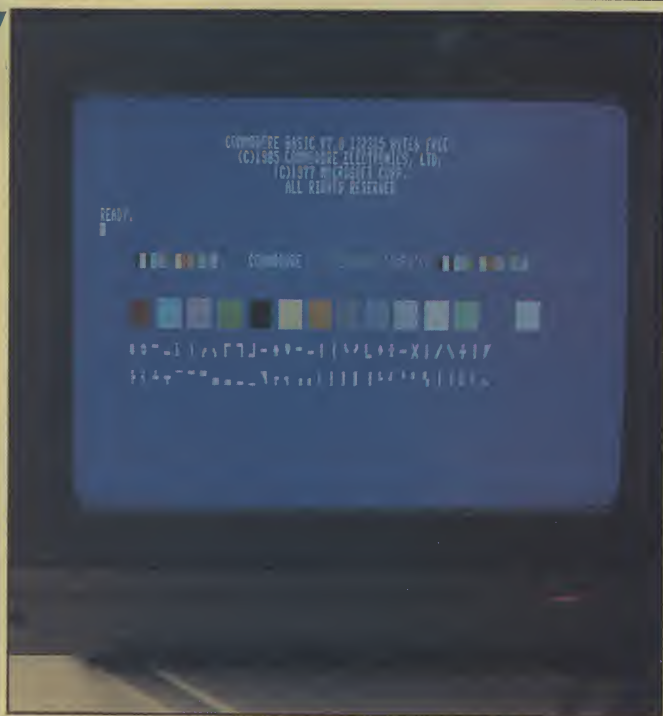
On powering up, the machine automatically switches to 128 mode with a 40 column display. There are two exceptions: 64 mode is implemented if it detects the presence of a cartridge, similarly CP/M mode is set up if the CP/M disk is present in the disk drive.

The opening display indicates around 63K of free RAM and that you're working with Basic version 7, presumably to show you it's much better than 64 Basic and twice as good as Basic 3.5 on the 16 and Plus/4. In fact, it has around 150 keywords, that's more than any Commodore Basic so far produced.

The processor is an 8502 (similar to the 6502 and 7510),

but it's an 8-bit chip so the 128K of RAM implied by the machine's name is arranged in two 64 blocks. These, unless reprogrammed, have 1K RAM in common at the low end of memory, allowing storage of machine-language to select a bank where it won't suddenly vanish. The first 64K bank holds program text whilst the second holds the variables.

Basic programs can't be anything like 64K, though, because the first bank also has many working storage areas used during Basic program running: for example, function key definitions (more about that later), disk commands, RS232 buffers, screen and colour RAM information and sprite storage (there appears to be space allocated for only eight of these). The 128 has a memory management unit (MMU) similar to the 64's PLA, which in effect includes as a subset.



Top left: the complete colour-coordinated kit, featuring C128, C1902 colour monitor and 1571 disk drive. Above: 128 mode gives you an 80-column display, 16 colours and the complete Commodore graphics set.

TELEGRAM

URGENT!

DOCTOR
Soft
Simulations

"The best simulation around ... A must for budding pilots" - P.C.N.

"I would choose Doctor Soft's 747 ... instrumentation clear and unfussy ... graphics are good ... smooth and realistic" - Software Today

NO. 1 BBC FLIGHT SIMULATOR*, 747, NOW AVAILABLE ON
COMMODORE 64 STOP SPECIAL 64K VERSION EXPLOITS
FULL COMMODORE GRAPHICS AND SOUND CAPABILITIES
STOP OVER 60 NAVIGATIONAL AIDS STOP OVER 12
AIRFIELDS STOP EXTENDED GROUND DETAIL COVERS UK -
N.W. EUROPE STOP COMPREHENSIVE PILOT WRITTEN
FLYING MANUAL & CHART STOP DAY/NIGHT & VARIABLE
WEATHER MODES STOP ILS VOR DME NAVIGATION STOP
UNIQUE 3D EFFECTS & SOUND EFFECTS

747 and other Doctor Soft programs are available from:

- W H SMITH • BOOTS • JOHN MENZIES
- MOST LEADING DEALERS • BY DIRECT MAIL ORDER (SEE BELOW).

BBC

ELECTRON

COMMODORE

747 is no ordinary flight simulator, BBC owners know it as the program that topped the BBC charts month after month last year.

Now for 1985 The Doctor Team (including a B.A. Captain, Professional Flight Simulator Programmers & Aerodynamists) have produced this extended and enhanced Commodore 64 version.

DIRECT
MAIL ORDER

Prices include V.A.T.,
Postage & Packing
Free

please circle computer and format required.



Cassette	Commodore 64	BBC 32	Electron
Disk	£12.95*	£8.95	£7.95
	£15.00*	£10.00	£10.00

I enclose £..... for copies of the above.

*Special extended 64K Version

NAME

ADDRESS

Cut out and send to:

DOCTOR SOFT, PO BOX 66, EAST PRESTON,
WEST SUSSEX Tel 0903 770044

CU

THE COMMODORE 128 — AN EXCLUSIVE PREVIEW

For memory expansion, there's space for another two banks of 64K RAM, perhaps as a 128K 'RAM disk'. This would be a battery-backed RAM pack, designed with its own device number to behave like a disk unit, allowing very fast access to data as no data transfer along a cable is required. Potential uses might include fast access to relative files, or storage of CP/M files (limited, of course, to 128K).

80 columns in 128 mode

Powering up with the 40/80 column switch set at 80 gives you an 80-column display. Alternatively, CTRL-X toggles you between the two, irrespective of the switch's position. But there are differences between the modes. 40-column mode uses the VIC 11 chip and sprites, just like the 64. 80-column mode uses the brand new 8563 video chip which is more advanced than dear old VIC and operates differently.

A major novelty is the 8563's dedicated RAM. Rather than use a chunk of Basic RAM to store bitmaps or character definitions, the chip has its own memory which is invisible (transparent) to the user. One advantage of this is that if you shift between upper/lower case mode and upper case/graphics mode, the other parts of the screen don't change and there's not the usual maximum of 256 characters on screen at any one time. That's pretty neat.

Like the 64, though, the 8563 has smooth scrolling, facilitated by allowing movements of the screen under control of several bits. The chip has no sprites but does have a block copy facility.

So you can shift parts of the screen around (probably using the WINDOW command) more or less instantaneously.

The obvious problem with using an 80-column display is that you need a monitor — a TV and even the Commodore 1701 monitor just won't do because they don't have the pixel density. But more about the new monitor later.

allows four bits to a pixel — red, green, blue and intensity. So you get eight colours and the same at half-intensity, making 16 (15 actually, because half-intense black is still black). Wordprocessing with dual-intensity letters should be just fine on the 128. The chip also supports double-width characters, underlining, flashing and cursor controls.

For sound and music production, there's the ENVELOPE (ADSR control), FILTER, SOUND and PLAY commands. There's also a TEMPO command that lets you assign a speed to a defined set of notes to be played. But, again, you're restricted to the three voices provided by SID.

Disk commands include DLOAD/DSAVE, DVERIFY and BOOT, as well as the traditional APPEND, BACKUP, CATALOG, COLLECT, and the rest. No other Commodore Basic has all these. It's worth mentioning that in 128 mode, some of these commands are allocated to the function keys, including RUN, LIST and SCR.

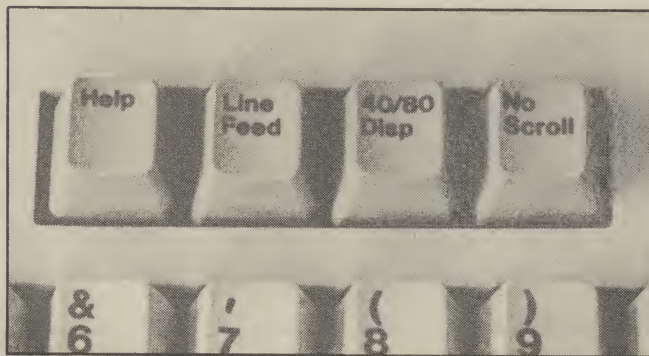
F8, for example, gets you into the monitor program provided in Basic 7; there are also structured loop commands like IF... THEN... ELSE, a lot of utilities like DELETE, RENUMBER and TRAP/RESUME (for trapping and correcting errors). In short, there's quite a bagful of Basic here.

The CP/M mode

Getting into CP/M mode is achieved simply by booting up the CP/M disk in the 1571 drive. This converts the 128 into a 40- or 80-column CP/M machine, using the latest version, CP/M 3.0. Column size is selectable by the switch or a software command. Since virtually all business software uses 80 columns, we'll concentrate on that mode. By the way, video and sound effects can't be used in the CP/M mode.

So what's CP/M? It's an operating system and monitor program designed by Digital Research for the now geriatric Z80 8-bit processor (similar to the 6502 but with different instructions). By itself, it doesn't do much more than recognise a handful of disk commands, and perform a set of input/output routines. But it does conform to a standard, and there is a wealth of (mainly business) software that runs under it.

Needless to say, to handle CP/M the 128 has the Z80 chip built in, but the input/output parts are written to select the 8502 processor, use the Kernal ROM to read the keyboard or print to screen, and then return to the Z80.



Four keys used only in 128 mode: 'Help' highlights errors in a Basic line, 'Line Feed' moves the cursor down, '40/80 disp' toggles between the 40 and 80-column display, and 'No Scroll' allows you to view a listing screenful by screenful.

Video effects and colour

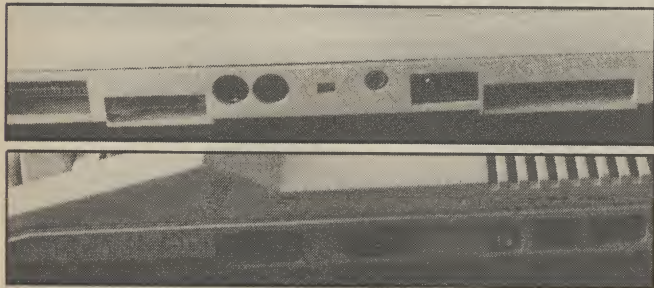
At time of writing, I don't have the information to judge whether video effects would be faster than sprites. Presumably you'd have to write a subroutine to move several sets of memory locations to give animation effects. In fact, there should be no restriction on size, as there is with sprites — so the results should be better than the 64.

Turning to colour, the 8563

The C-128's Extended Basic

The new Basic seems to be made up of the best parts of all the previous Commodore Basics — from the Pet, the 64 and the 16. For example, you can use the ESC key for fancy screen editing (providing you can remember what the keys do): ESC-D for example, deletes the current line. You can also set up a screen window and use the CTRL key for extra things like underlining.

Graphics commands include DRAW, CIRCLE (which also draws polygons), BOX for drawing rectangles, and PAINT which fills in any enclosed area on the screen. BUMP tests for sprite collisions, whilst RSPCOLOR, RSPPOS and RSPRITE return various sprite details. SSHAPE and GSHAPE allow movement of sprite memory (as in the 16). From this, you'll gather that some of the Basic graphic commands are intended for 40-column mode and won't work with 80 — and vice versa.

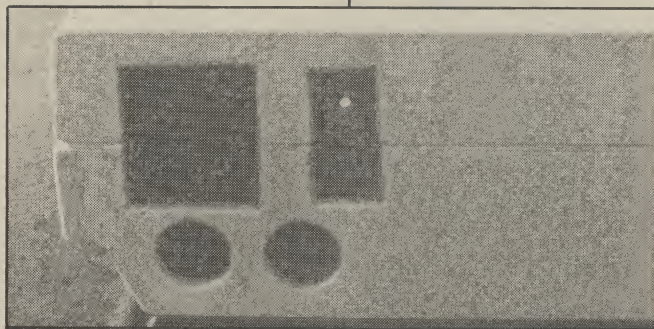


Top: rear view of the 128 showing (left to right) user port, RGB output, TV, output, audio/video socket, serial port, cassette port and cartridge port.

Bottom: side view showing (left to right) user port, RGB output, TV socket, video/audio socket, serial, cassette and cartridge ports.

THE COMMODORE 128 — AN EXCLUSIVE PREVIEW

Now for the big question, is CP/M any use? Technically, that will depend upon the effective working of the new 1571 drive (read on), but there are hundreds of CP/M programs, and it does have a large following even though business users have and will continue to adopt 16- and 32-bit operating systems. You never know, the 128 could cause a resurgence of interest in CP/M.



Top: 1571 disk drive — intelligent enough to work in three modes and a variety of speeds.

Left: rear view of the 1571 showing two serial ports, power switch and mains socket — just like the 1541.

Software support

Software houses will, no doubt, continue to produce games for the 64, perhaps adding a routine to automatically switch to 64 mode if a 128 is detected. Why restrict the market by writing especially for the 128, except for long programs like adventures? In more serious applications, business and education for example, 128 mode will become essential.

Commodore itself is placing its software emphasis on the 128 mode and will have a range of 'leisure' software to offer by launch date, including a few adventures. But it's aware that the 128 is an unusual machine, attractive to home and business users, and is being careful not to neglect either area. Already, software houses are adapting existing 64 business packages for the new 80-column format — see News pages for more details.

The C-128D

Last month we reported the integral disk version of the 128, the 128D. Further news from Commodore points to the eventual appearance of a Business Pack that includes 128D, the C1902 colour monitor, printer and a range of business software. The whole lot should sell for just under £1,000, providing business users with a plug in and go system, and one-stop shopping.

Conclusions

If the performance and pricing of the 128, including its disk drive and monitor, are competitive, the machine should appeal to a wide range of people, probably the widest range so far for a computer. It will allow 64 owners to upgrade painlessly and business users will get a satisfactory and cheap package that doesn't look like a toy.

Thirdly, the new powerful Basic should appeal to programmers looking for something to get to grips with.

Now for the price: it's all set to sell at \$300 in the States. UK prices should correspond. Without presuming too much, if nobody invents any, there should be few obstacles to this machine's success. □

PERIPHERALS FOR THE 128

- **1571 disk drive:** like the 128 itself, the 1571 works in three modes. In 64 mode it emulates the 1541 drive, offering the same capacity and (slow) data transfer rate. In 128 mode, its speed increases by a factor of six and data storage goes up to 350K. Lastly, in CP/M mode, speeds are increased even further to make the drive compatible with IBM System 34 CP/M data disks, giving 410K of storage. It's beige in colour and offers two serial ports on the back. A double-drive version of the 1571 is also planned with the drives stacked vertically. No prices for either yet.

- **C1902 colour monitor:** once again, beige in colour, the 13-inch monitor offers

both RGBI and composite video input. It has a true 80-column screen, essential for getting the best from the 128. Again, no prices.

- **Commodore Mouse:** an optional cable-connected input device. You push it around on a flat surface to control the on-screen cursor. No price yet.

- **MPS 802 printer:** latest dot matrix offering from Commodore. It has an 8×8 matrix, 80-column width and prints bi-directionally at 60 characters per second. Commodore graphics, upper and lower case characters are also available. Unlike the 801, this machine has true descenders. Once again, no prices are yet announced.

COMMODORE 128 SPECIFICATION

	64 MODE	128 MODE	CP/M MODE
CPU	6510	8502	Z80A
MAX RAM	64K	128K (512K expandable)	128K (512K expandable)
ROM	16K	48K	n/a
LANGUAGE	Basic 2	Basic 7	n/a
SCREEN DISPLAY	40 by 25	40 by 25 80 by 25	40 by 25 80 by 25
RESOLUTION	320 by 200	320 by 200 640 by 200	320 by 200 640 by 200
CLOCK SPEED	1.02MHz	10 or 2MHz	4MHz
COLOURS	16	16	16

TOP TEN IN EDUCATIONAL SOFTWARE

FOR THE
COMMODORE 64 or VIC 20
ONLY £4.95 EACH

- (1) PHYSICS O LEV/CSE
- (2) BIOLOGY O LEV/CSE
- (3) MATHS CSE
- (4) COMPUTER STUDIES O LEV/CSE
- (5) MATHS 12/14 YRS
- (6) SCIENCE 12/14 YRS
- (7) MATHS 8/11 YRS
- (8) ARITHMETIC 7/10 YRS
- (9) REASONING 11 +
- (10) KNOWLEDGE 9/99 YRS

Immediate delivery by First Class Post

MICRO-DE-BUG CONSULTANCY
DEPT. CU. 60 SIR JOHNS ROAD
SELLY PARK, BIRMINGHAM B29 7ER
TEL. 021-472 7610

(Please state computer)

Written and produced by Qualified Educationalists.

BACK-UP PROBLEMS SOLVED

DCL1 DUAL DATABASE INTERFACE

Enables the quick & easy creation of back-up copies of all Turbos, M/Code, Data Files etc. If your program can be loaded it will be transferred exactly on a second datasette. Does not require software or modifications to your computer. Order as DCL1. **Price £10.00** (CBM 64 & Vic 20)

DCL4 AUDIO RECORDER INTERFACE

Enables back-up copies to be made on 1 or 2 audio cassette recorders or on a second datasette. Like the DCL1, it will transfer any program that can be loaded. Does not require software or modification to your computer. Order as DCL4. **Price £18.00** (CBM 64 & Vic 20).

SPECIAL OFFER

Trigsoft originators of dual cassette interfaces, now offer you a Reset1 Unit for only £1.00 if purchased with a DCL1 or DCL4. Offer ends 1 July 85. Order as DCL1/Reset1 or DCL4/Reset1.

CV COPY TAPE BACK-UP PROGRAM RESET1

Ideal for anyone with only 1 datasette & no audio recorder, it will transfer programs from tape to tape or tape to disk, menu driven with prompts. Order as CVCOPY. **Price £4.50** (CBM 64 only).

This reset unit plugs into the CBM 64 or Vic 20 allowing reset without erasing your program. Full instructions included so that most basic & M/Code programs can be recovered. Order as RESET1. **Price £3.00** (CBM 64 & Vic 20).

OTHER PRODUCTS

MSX Printer Cable, Fast Disk Cartridge C64, MSX Expansion Connector/Cartridge Adaptor, ROM pack for C64, Scart Video Connectors & Leads, Audio Level Meter for MSX, Spectrum etc. Send SAE stating machine & requirements.

Ordering: — All prices include recorded delivery & are fully inclusive (overseas add £1.00).

ALL HARDWARE IS GUARANTEED FOR 1 YEAR

**** 10 DAY MONEY BACK GUARANTEE ****

We will refund your payment less postage if any hardware item is returned undamaged within 10 days.

Send to **TRIGSOFT**, Dept (CU), 161-163 Rutland Street, Grimsby, South Humberside, DN32 7ND. Tel: 0472 48304.

Plus/4 Magic for Beginners

by Bill Bennett
£9.95

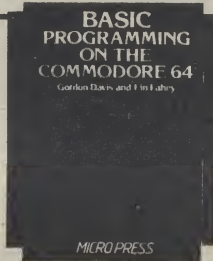
This introduction to the Commodore Plus/4 provides newcomers to the machine with a comprehensive guide to all the facilities available. It includes a review of the machine itself and examines ROM software and hardware and programming.



BASIC Programming on the Commodore 64

by Gordon Davis and Fin Fahey

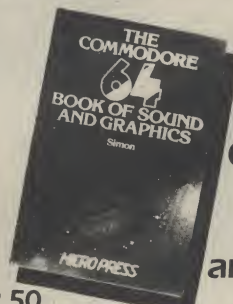
This book is written for beginners who want to learn BASIC programming on the Commodore 64. The 64's special features are covered with chapters on Simple Sound, Sprite Graphics and High Resolution Graphics as well as the more general areas of BASIC programming.



The Commodore 64 Book of Sound and Graphics

by Simon **£8.50**

This book provides a thorough examination of how to use the graphics and sound facilities to help you make full use of the potential offered by the Commodore 64. Each facility is clearly explained through ready-to-type program listings.



Available from Booksellers or direct from the Publishers.

Orders to: Micro Press, 27 London Road, Tunbridge Wells, Kent TN1 1BX. Tel: 0892 39606

Please send me:

- ☐ Plus/4 Magic for Beginners
- ☐ BASIC Programming on the Commodore 64
- ☐ The Commodore 64 Book of Sound and Graphics

I enclose a cheque/PO for £
(UK orders add £1.25 p&p for a single copy and 75p each additional copy. Overseas orders add £1.25 p&p per copy).

5/85 CU



Please debit my Access/Barclaycard/American Express/Diners Card No:

Name:

Address:

Signature

Date:



State of the Art Software

This whole page was printed in just one run using the special commands contained in the latest and most sophisticated printer utility ever written for the Commodore 64!

NOW, YOU CAN BE THE MASTER OF YOUR PRINTER WITH,

CENTIPEDE

The Advanced

Commodore 64-CENTRONICS

Interface / Printer Utility



COMPATABLE HARDWARE - CABLES

The printer is connected to the 64 via the user port. Pins A to H are used- (PA2 to strobe and FLG to Acknowledge. A proper shielded multi-core cable is supplied (if needed) rather than ribbon. It works fine with 'EASY SCRIPT'.

SOFTWARE - This program is fitted a disposable Auto-Relocator which enables it to Co-exist with most other utilities. You can, if desired, specify an address on loading. Another feature to put you in control!

IF YOU ALREADY HAVE A CABLE - WE CAN ADVISE YOU ON ITS SUITABILITY - YOU NEED ONLY PURCHASE THE SOFTWARE.

THIS PROGRAM HAS BEEN TESTED WITH BOTH DOT MATRIX AND DAISY WHEEL TYPE PRINTERS WITH EXCELLENT RESULTS

VERSATILE

As stated at the top of the page, this whole page was printed out in just one run and not just 'stuck together' for the benefit of this advert! Proof of what is possible when using 'CENTIPEDE'. So far I have mixed Hires with the printers' own font. There's more:-



Above.. I have taken a piece of Hires screen, and by using a simple FOR-NEXT loop, have dumped it here using each of the modes available on my printer. I even have a choice of 4 ROTATIONS! (The 4th can be for shading). The rotation can be used in both low and hi-res and, can be either a whole screen or just one character square. There are over 20 commands, and 255 secondary addresses, giving the user plenty of freedom to make his printer perform whatever tricks it was designed to, (and perhaps a few the makers hadn't thought about!).

The writer has even made some amendments to the operating system of the 64, just to make life a little easier. You can print.. "CBM(ESC) Control codes" (or maybe.. "CBM(ESC)(r)(v)(s)(y)(e)(l) Control codes")

Or if you're just not in the mood for opening and closing files, then you can use the '*' command which does it all for you! Generally, the use of ESC codes has been cut to the minimum so you may enjoy using your printer to the maximum. Of course, you can still use this utility as though the extra features didn't exist.. We don't want to change tradition ...too much. Whichever way you want to use your printer. You'll find the way with 'CENTIPEDE'.

USE THIS UTILITY TO DUMP PICTURES FROM 'DOODLE' & 'KOALA PAD', for just:

£11:50 **£9:50**

Multi-Core cable + **£10 EXTRA** **ALL INC!**

OR CHECK OUT ONE OF OUR PRINTER OFFERS:-
AND GET CENTIPEDE FREE!

THE PRINTER USED FOR THIS PRINTOUT IS, WE THINK, THE ULTIMATE MACHINE. HIGH SPEED (120 cps), LTR QUALITY, OVER 70 ESC CODES.

ITS CALLED THE **Sakata SP-1200 PLUS** AND COST JUST £292 INC. CENTIPEDE & CABLE

PHONE OR WRITE FOR PRICES ON **EPSON** (Full range available)

Some other makes of printers we have to offer. (Prices inclusive - except delivery)

epson LTR-1 PRINTER **£160** INCLUSIVE LQ
MANNESMANN **MT80** £217+ Full range available

BITEMAN Printers from £249

WE HAVE MANY MORE PRINTER OFFERS - WRITE OR PHONE, NOW - AND CHECK OUT OUR EXPANDING SOFTWARE RANGE

MUSHROOM SOFTWARE

MUSHROOM SOFTWARE is marketed by :-
KEYPLAN COMPUTERS LTD

193 ROMMANY ROAD, LONDON SE27 9PR

01-670 3533

SCREEN SCENE

The spirit of the Blitz is alive and well in this month's selection of games. There's a head-to-head of Spitfire games and, best of all, our current favourite Dambusters. The flight theme is continued with two helicopter games, one a flight simulator, and an aircraft 'emulator' for the C16. Motor racing also features with a head-to-head of grand prix type games, whilst there's also a chance to be energetic with Imagine's excellent World Series Baseball. Next month there'll be even more reviews. Watch this space!

SCREEN STAR

Dam Busters
Commodore 64
US Gold
Price £9.95/cass
£14.95/disk

Presentation: ■■■■■
Skill level: ■■■■■
Interest: ■■■■■
Value for money: ■■■■■

Dam Busters will be launched in two weeks' time to coincide with the fortieth anniversary of Operation Chastise - the historic bombardment of German dams.

The raid was made famous by the film starring the late Sir Michael Redgrave who played the part of Barnes Wallace - inventor of the bouncing bomb used in the raid.

US Gold describe Dam Busters as "their best game yet". That's high praise coming from the people who have brought out some of the best games for the 64 titles like Zaxxon, Beach Head, and Solo Flight. It's another of their imported titles - from the little-known Canadian company Sydney Development Corporation.

This really is a first class game. In it you play seven different characters - the key personnel required to fly the Lancaster to the dams and drop the bombs successfully.

The pilot part of the game is not quite as taxing as a straight flight simulation - but it's no pushover either. Controls to be

mastered are a flight-accurate joystick, i.e. up for down and down for up. Standard flight controls like the altimeter, directional compass, artificial horizon, and airspeed must also be mastered if you are to keep the Lancaster in the air.

Two gunners have the hottest seats in the plane. The front gunner controls the twin .303 calibre FN5 machine-guns and the tail gunner has four FN20 .303 calibre machine-guns. Shoot 'em up fans will love this part of the game. Graphics are superb and reminiscent of Beach Head as those Messerschmitts scream in on you.

The front gunner has a second role to play - that of bomb aimer. To bounce the bombs successfully onto their targets two instruments must be used on dam approach. The Bomb Rotation Switch and the Aircraft Altitude Spotlight are used to drop the bomb at just the right angle so that it will skim across the water, bouncing over the defences, and hitting the dam at just the right angle to pierce the several feet thick concrete.

The navigator keeps the Lancaster on course and chooses the targets at the beginning of the mission from a map of western Europe. As well as dams there are airports, military installations, population centres, and industrial complexes.

The navigator has one of the most difficult jobs in the plane as a very precise approach to the dam is required if the Lancaster

is to drop the bomb successfully and, at the same time, avoid the heavy German defences.

There are two engineers on board. Depending on which skill level you choose to play, you control one or both. Engineer one is concerned with the functioning of the engines. Engineer two - who plays only in the Squadron Leader option - is concerned with the landing and taking off equipment.

The key to a successful mission in Dam Busters is to master all of the skills and switch between them constantly to check progress. As well as the different role screens there is also a screen showing the dam after the bomb has been dropped, with the water spilling through. A damage and status screen is also incorporated for you to monitor the state of the Lancaster.

This is THE flight game. It has the edge over the straight flight simulation because of the historically accurate mission you are asked to undertake. You do not need to be a budding pilot to get into the game - though the graphics and multi-screen approach give it the feel of a top quality flight sim. The only disappointment is that US Gold could not get permission to use the Dam Busters theme tune on the load screen. It would have been neat to listen to Dam Busters as you fly home after a successful raid. Despite that, the game is excellent and I can thoroughly recommend it. The best flight game yet for the 64.



Top: Pilot's view from the cockpit. Searchlights pan the sky and barrage balloons bar your way en route. The flak is only moments away. **Centre:** View from the forward gunner's position. Messerschmitt's sweep in unexpectedly. Keep your nerve or you'll never get as far as the dam. **Bottom:** As navigator you must select your target. You don't have to go dam hunting, there are military installations to bomb if you feel like it.

Rocket Ball
Commodore 64
IJK Software
Price £7.95/cass

Presentation: ■■■■
Skill level: ■■■■
Interest: ■■■■
Value for money: ■■■■

Remember *Rollerball*, the futuristic film about a very violent game with manic Bach organ music? Well here's the game. Two teams of five players career anti-clockwise around the circuit looking to nab the ball, batter the opposition and, pot a few goals.

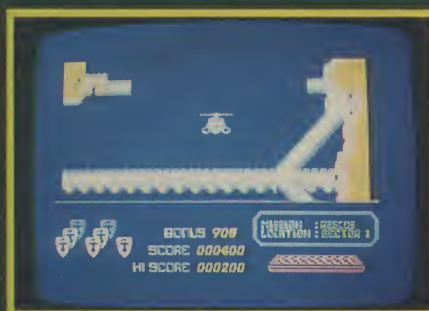
Everything is allowed - there's no such thing as a foul - but the basic techniques of play need practising or you certainly

won't get a look in when playing the computer. There are eight joystick actions to master but nothing too involved, it's just a case of knitting everything together to avoid disjointed play. Take on the micro, or slug it out with a friend in this futuristic rough-house of a gladiatorial contest on wheels.

By far the best of IJK's current programs and worth having if you fancy a change from soccer.



SCREEN SCENE



Airwolf
Commodore 64
Elite
Price £7.95/cass

Presentation: ■■■■
Skill level: ■■■■
Interest: ■■■■
Value for money: ■■■■

Airwolf is based on a TV series which I've never seen, though no doubt it's a Blue Thunder job.

The basic idea is to fly your killing machine through an underground complex of caves where a group of scientists have been imprisoned by a crazed general. Sounds fairly run-of-the-mill doesn't it? Wrong. For a start your killing machine doesn't kill. Then you find out that the chopper is not very easy to control —

it reacts to gravity, so you have to keep a very tight rein on it or you end up bouncing off walls like a pinball. Added to this, everything else is stacked against you. If you hit a wall, or something hits you (like the missiles, balloons, cars, flying saucers, the list is nigh endless) you lose a shield. You have nine and if you're not careful they disappear faster than a rat up a drainpipe.



World Series Baseball
Commodore 64
Imagine
Price £7.95/cass

Presentation: ■■■■
Skill level: ■■■■
Interest: ■■■■
Value for money: ■■■■

This sports simulation promises 'cheer leaders and all the razzmatazz of the USA', but it's really not that bad at all. As any Englishman knows, baseball is glorified rounders, and nowhere near as good as cricket. Nevertheless, this is a very entertaining game, which attempts to emulate many of the aspects of baseball, including stealing, strikes, and different pitches.

When you're not batting, you pitch and field. Pitching is controlled from the joystick, and you have several options for type of throw.

As batsman you have three types of shot: normal, fast and slow. Hit fire to swing the bat. If you connect sweetly enough you'll hit a home run and romp round the bases to triumphant music, just like Robert Redford in *The Natural*.

Possibly the best option is the



Super Huey
Commodore 64
US Gold
Price £11.95/cass
£14.95/disk

Presentation: ■■■■
Skill level: ■■■■
Interest: ■■■■
Value for money: ■■■■

Super Huey, which sounds like something you do after ten pints of Owd Roger, is a flight simulator. Not one of the many airplane kinds, but, in common with one of the present flavours of this month, a helicopter one. The difference being that a helicopter, as I'm sure you are well aware, is a rotary wing aircraft and hence flies differently.

Nevertheless, the general flavour of all flight simulators is there with cockpit viewpoint full of instrument panels telling you

altitude, speed, direction, etc.

You get four modes of operation: solo flight, exploration, rescue, and combat. The first is self explanatory, giving instruction; the second allows you to fly through uncharted territory and map it out; rescue sends you to pick up stranded personnel in a mountainous region; whilst combat is obvious. My main niggle is with the last of these. There's not enough combat and when I was flying along ten feet off the ground my gunfire was going



Elite
Commodore 64
Firebird
Price £14.95/cass
£17.95/disk

Presentation: ■■■■
Skill level: ■■■■
Interest: ■■■■
Value for money: ■■■■

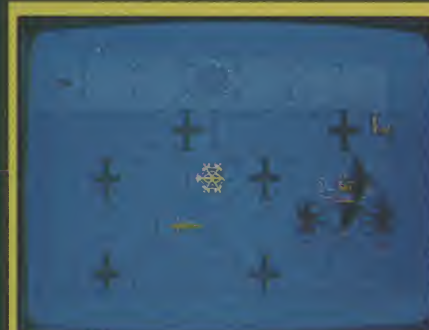
Elite was the best selling game ever on the BBC home computer, so impressed the software houses that a mad scramble ensued to get the rights to convert the game to other systems. Firebird, the British Telecom software house, won the scramble for a reputed £10,000.

A lot of money to pay for a game that is not original. The first deep-space strategy cum

shoot 'em up game was written for the Atari 400/800 and was called Star Raiders.

Star Raiders was never converted to the 64 so Elite, although not an original idea, is at least first on the 64.

The aim of the game is to achieve the supreme ranking of Elite. To do this you have to equip your spaceship, travel the myriad planets in the galaxy, do-



Ice Palace
Commodore 64
Creative Sparks
Price £7.95/cass

Presentation: ■■■■
Skill level: ■■■■
Interest: ■■■■
Value for money: ■■■■

The Kingdom has been cast under a spell of eternal darkness by the wicked Ice Queen. To break her evil spell you must find all seven pieces of the crown she stole from your father, the King, when she killed him.

Events take place in real time over two separate screens. The action screen consists of a honeycomb of hexagonal rooms through which you must move in order to discover clues which will lead you to a piece of the crown.

Your progress is hindered by the Ice Queen's servants, dispatched with maddening regularity in the form of dragons, bats, knives and globules of protoplasm. These can be killed with a bolt from the firestick — your only weapon, but each time you allow yourself to be touched by a servant you will be turned slightly more evil. Your level of goodness can be restored by killing all the servants and entering the spinning cylinder which then ap-

There are some 36 areas of play and so far I've seen about six of them — I can't get any further. If you hit some things, like the boulder, you disintegrate on the spot, which is enough to have you chewing at the carpet if you've put in all the hard work to get that far.

All of which is a great shame, because the graphics are very good indeed, quite spectacularly so. And a good deal of strategy is

required to work out what to do and where to go. But I can't help feeling that it would be a better game if it were a bit easier. Obviously it's hard to find the right balance between ease and difficulty. Too much of either and the game goes straight out of the window.

I hope people do persevere with *Airwolf*, but I'm sure interest could have been sustained if something had made it easier.

one that allows you to steal a run. This is like legalised cheating, you make a run for another base when the opposition aren't watching. Select your steal option and go for it.

Nothing is perfect and I do have a few grumbles, particularly about playing the computer, because it cheats. I'm not just a bad loser, honest. Sometimes when a batsman hits the ball out they run anyway. That should be

a foul shot. Also as batsman against the computer yourself you are given no chance. Unable to direct your shot, you are invariably caught or run out in no time at all.

These grumbles aside, *World Series Baseball* is good entertaining stuff. The graphics are fine, particularly so on the giant 3D video screen at the end of the field, which gives you close-up action of pitcher and batsman.

over the top of trees.

At least, though, there is something to see on the ground in this program unlike many terribly serious ones which show a horizontal line dividing two areas of green and blue. You know the kind, they're American and often so good that the Russians buy them to discover military secrets about flight capabilities' of the plane.

Control is relatively easy because there aren't too many dials to keep an eye on, but the

joystick does have two modes of operation: collective and cyclic. The sound is good with the rotor blades making a nice chopper noise. Personally, as flight simulators go, I'd stick with *Fighter Pilot* or go for one of the Spitfire simulators reviewed here, but this is pretty good and essential for helicopter enthusiasts. The exact same program is also available through Audiogenic at £8.95 (cass). I'll leave it to you to decide whose to buy.

ing war or trading — depending on your inclination.

The planets you wish to visit are chosen from an impressive galactic map. The computer keeps a record of your successes and failures. You need to boost your wealth — either by plunder or commerce — to enable you to equip your ship with the technology needed to reach that ultimate goal of *Elite*.

The 64 version of *Elite* is easily more impressive than the original BBC version with better sound and graphics and some additional game-play elements.

Elite is complex and challenging. Its strength is that it appeals on several different levels. It is a flight simulation of some merit, a strategy game requiring careful planning, and a damn good shoot 'em up all rolled into one.

pears in one of the rooms. Occasionally the ghost of the old King floats across the screen and a touch from him won't do you any harm.

Once in a sword room you can discover what's there by switching to the adventure screen. Here you are presented with an inventory of items collected, a scrolling options menu, and a 'status line' which gives responses to your actions in *Olde English*. A burning candle shows

the amount of time remaining and a bar chart indicates your level of good/evil. The game should therefore appeal to everyone, from adventure novice to arcade ace.

For my money *Ice Palace* is the best game currently available for the 64. The idea is excellent and the sound and graphics are nothing short of superb. If this doesn't inspire you I recommend you chuck your 64 in the bin and take up some other pastime.

Spitfire 40
Commodore 64
Mirrorsoft
Price £14.95

Presentation: ■■■■
Skill level: ■■■■
Interest: ■■■■
Value for money: ■■■■

Spitfire Ace
Commodore 64
US Gold
Price £9.95/cass
£14.95/disk

Presentation: ■■■■
Skill level: ■■■■
Interest: ■■■■
Value for money: ■■■■



Spitfire 40 is the latest in a long line of flight simulations. Just about every conceivable type of aircraft has now been turned into a simulation — from 747s to gliders and jet fighters with a few helicopters thrown in for good measure.

Now nostalgia seems to be taking a grip on the market. This month's Screen Star is the excellent *Dam Busters* — though the romantic Spitfire gets in on the action as well.

In this head to head review we compare Mirrorsoft's game with Spitfire Ace from US Gold.

Spitfire 40 has the most impressive cockpit display I've seen on any flight simulation. Several authentic dials and buttons have an authentic gun-metal Spitfire look about them.

Flying the Mirrorsoft Spitfire is a joy. Turn on the engine, take off the brakes, hurtle down the runway and pull back on the joystick and you're in the air. But if taking off is relatively easy, landing and manoeuvring in a dogfight will take lots of practice and

considerable skill.

The game includes a map of the South of England — the authentic Battle of Britain location. By pressing a keyboard button a close-up of some of the ground locations is shown.

Spitfire Ace is less of a straight simulation than *Spitfire 40*. Your plane is represented by quite a small shape on screen. The plane is shown flying low over enemy terrain with its shadow visible on the ground below. Spitfire Ace features 14 different combat scenarios — one of which gives you the mission of defending London during the Blitz. It's gripping, patriotic stuff — as you do battle with squadrons of Messerschmitts and other German bombers.

Spitfire Ace is not quite up to Solo Flight or F15 Strike Eagle standards — the two other flight games from the Microprose-US Gold stable.

It lacks the feeling of flight that you get with the other two. For my money the Mirrorsoft Spitfire game is the better of the two.



B&B DND

CHALLENGING SOFTWARE



WE'VE DESIGNED AN ADVENTURE
AND DESTROYED THE TEXT!

SHADOWFIRE
USES PICTURES NOT WORDS
TO ISSUE COMMANDS.

SHADOWFIRE

COMING SOON FOR SPECTRUM 48K
AND COMMODORE 64

SCREEN SCENE

Your 64's gotta lotta throttle with two new grand prix games just out. Pole Position needs no introduction to game fans who will be familiar with it from the arcades where it was one of the biggest hits of all time.

The game was launched originally on the Atarisoft label — a rather pricey cartridge at £31.00, but US Gold have now obtained the rights to the game and produced a tape-based version — at a much more accessible £9.95.

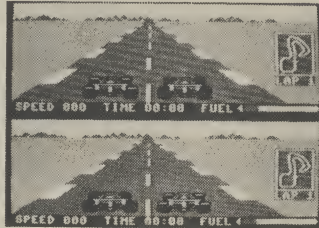
Pole Position features three different race circuits. The first of these is a practice run which is a solo drive with no other racers to contend with.

The easiest of the competition drives is the Monaco Grand Prix with the least number of obstacles to contend with. Slightly tougher is the Namco Speedway — but the toughest race of all is the Datasoft 500.

Graphics are excellent in this game — there is a real sensation

Pitstop II
Commodore 64
Epyx—CBS
Price £14.95/disk

Presentation: ■■■■
Skill level: ■■■■
Interest: ■■■■
Value for money: ■■■■

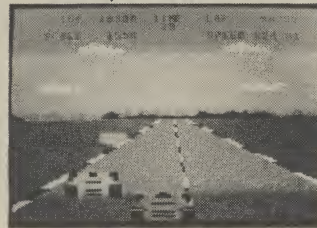


of speed and considerable skill is required to drive the car. Nice little touches like the advertising hoardings on the side of the track



Pole Position
Commodore 64
US Gold
Price £9.95/cass
£12.95/disk

Presentation: ■■■■
Skill level: ■■■■
Interest: ■■■■
Value for money: ■■■■



have been converted faithfully from the arcade original.

Pitstop II is an Epyx title — sold in the UK by CBS. This pro-

mised well, as the last CBS/Epyx disk I played was Impossible Mission — last month's Screen Star and one of the best computer games of all time.

Six real circuits are on offer here: Brands Hatch, Hockenheim, Sebring, Watkins Glen, Rouens Les Essarts and Vallelunga. The game uses a unique split screen technique to enable you to race 'head to head' against an opponent or the computer.

There are several game play options — including skill levels, name and opponent's name (I was Nelson Piquet and the 64 was Nicki Lauda). The graphics in this game are head and shoulders above Pole Position. The strategy element of having to change tyres in the pits also adds an extra degree of realism.

If you were hooked on Pole Position in the arcades you probably won't be able to resist the 64 version but for my money Pitstop II is the better game.

Mama Llama
Commodore 64
Llamasoft
Price £7.50/cass

Presentation: ■■
Skill level: ■■■
Interest: ■
Value for money: ■■

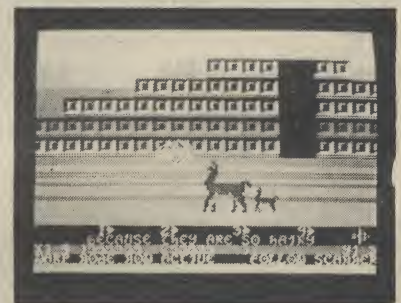
Mama Llama is another comic shoot 'em up which pretends to be very different, and very wacky but is plain boring.

You're supposed to spirit a mummy llama and her two sprogs across lots of screens whilst shooting holes in yaks and goats and other shaggy critters with a 'killdroid'.

The action takes place on planet Led-Zepp IV (groan), and you have to gain more energy through reGenesis (howl), which

you do by sitting down. This, is how all ageing '60s rock fans renew their energy.

The turgid bumph which comes with the game urges you to preserve your spatial awareness and apologises for the lack of a Genesis soundtrack. Well I didn't need one to cure my insomnia — I just put on the game, then I demonstrated my idea of spatial awareness on the cassette. I lobbed it in the bin. Llamasoft fans will love it!



Confuzion
Commodore 64
Incentive
Price £7.95/cass

Presentation: ■■■■
Skill level: ■■■■
Interest: ■■■■
Value for money: ■■■■

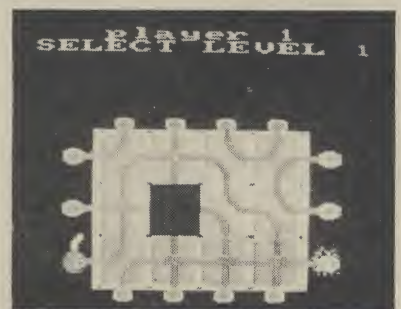
At last, the game of the advertising stunts we've been suffering lately

Confuzion is similar to a fairly unsuccessful arcade game called Locomotive — in which you had to move sections of track around the screen to create a continuous route for the train.

The train has been replaced by a spark and the objective of the game is to get the spark to collide with a bomb on the outside edge of the play area.

If you explode one bomb you are then given two bombs. The sections of track are now smaller and more difficult to manoeuvre. There is also a water sprinkler at work in the play area that you must avoid. It's difficult enough to detonate the bombs in the first few screens — but — there are 64 more to get through.

There is nothing particularly new or innovative about Confuzion. It is hellishly addictive.



Ciphoid 9
Commodore 64
GB Standard
Price £9.95/cass
£14.95/disk

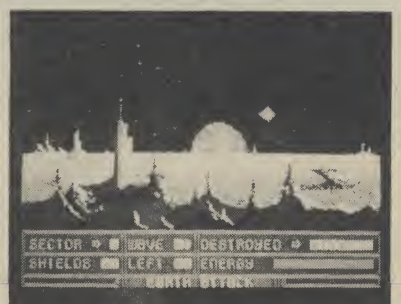
Presentation: ■■■■
Skill level: ■■■■
Interest: ■■■■
Value for money: ■■■■

This is a lunar shoot 'em up which appears at first play to be a lot better than it really is. Stop the hordes of alien ships that zoom in on your position with a barrage of shells. Fail, and you get to watch earth being blasted into oblivion.

You have fifty shields for protection and you must destroy a mother ship to renew them and progress to another sector.

When I saw it at the LET show it looked excellent, with screens

of major earth cities like London and Paris. The cassette version does not include these, you have to buy the disk to get those, or the follow-up cassette (Ciphoid 9 Earth Attack) which is a shame because the 3D graphics are very good indeed, with a nice sense of perspective and general definition. It is this quality that saves the game from being simply average and turns it into something just about worth playing, especially for disk owners.



SCREEN SCENE

Gremlins Commodore 64 Adventure International Price £9.95

Presentation: ■■■
Skill level: ■■■
Interest: ■■■
Value for money: ■■■

Gremlins, the adventure game is now on sale — hot from the keyboard of Brian Howarth — Adventure International's best known UK programmer.

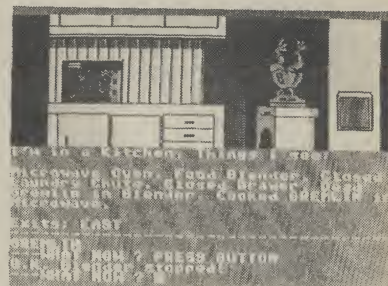
The game follows the plot of the film closely. Too closely in the view of our office adventure expert.

The aim of the game is to help the friendly Gremlin — Gizmo, to defeat the evil Gremlins lead by the vilest one of all — Stripe.

You play the part of Billy who

has been tricked by the Gremlins into feeding them after midnight. This caused them to multiply and they are now causing havoc all over the small town of Kingston Falls.

Gremlins has no music or sound effects but it is faultlessly logical. No silly red herrings or doubtful solutions. Another nice touch is the direction indicator which tells you what direction to travel in. Beginners only, seasoned adventurers will sail through.



Fantasy Five Commodore 64 Commodore Price £9.99/cass £9.99/disk

Presentation: ■■
Skill level: ■■■
Interest: ■■■
Value for money: ■■■

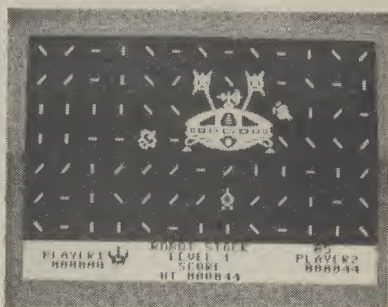
Fantasy Five is simply five games packaged together. For your money you get *Buffalo Roundup* in which you chase a buffalo herd and try to get them into a corral before they nip out a gap in the screen and wander around your living room. *Save me Brave Knight* pits you against a castle gate, monsters and witches, all of whom are trying to stop you saving some dame in distress. Irritating.

The best of the lot is *Photon*

Reflection in which you have to destroy an alien mother-ship situated in a grid of reflectors.

Spatial Billiards is a sort of 3D Pottit and is about as much fun as watching Steve Davis.

Finally, *Dancing Monster* you have to transform a monster back into a princess, while it dances around. It looks like the Elephant Man doing the Hokey Cokey after several pints and is, unsurprisingly, pure drivel. In short, Fantasy Five is pretty poor.



Ace Commodore 16 Cascade Price £9.75/cart

Presentation: ■■■
Skill level: ■■■
Interest: ■■■
Value for money: ■■■

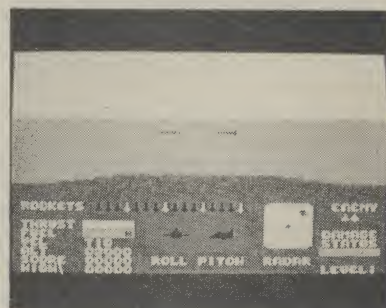
Ace is what Cascade call an 'air combat emulator'. No trivial preliminaries like take off, Ace pilots begin their mission in mid-flight.

Track down and destroy enemy fighters. With the aid of your long-range radar. Once visual contact is established you must pursue your adversary before dispatching him to an early grave with either heat-seeking or conventional missiles. He will, of course, fire back, which

makes life considerably more difficult, as does the danger of running out of fuel or crashing into the ground.

Careful observation of the instruments together with economic flying and use of ammo is therefore essential.

The action is extremely fast and difficult to master even in daylight (other options are dusk and night flights) so it's unlikely you'll earn your wings overnight and become bored with it.



Berks Commodore 16/ 64/Vic-20 CRL Price £6.95

Presentation: ■■■
Skill level: ■■■
Interest: ■■■
Value for money: ■■■

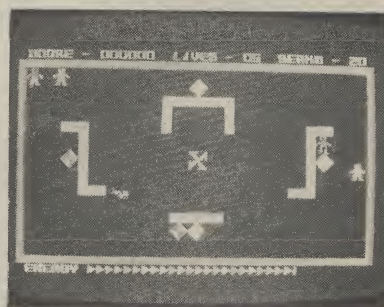
The general trend in standards of C16 software seems to be on the up and Berks, I'm happy to report, is no exception.

The Berks — robots to you and me — are infesting your monitor screen. Destroy them using your 'terror tank'. Here you have one big advantage, Berks can't fire back, or perhaps they're just too stupid.

The Berks are protected by their faithful drones which follow you around the screen in an ef-

fort to entrap you. One touch and you're dead. If things get tricky you can stun the drones by firing at them but, alas, they are immortal so only a temporary respite is gained. If you manage to destroy all the Berks before running out of energy or losing all five lives you get to have a bash at the next screen which is slightly more difficult.

If you're after arcade action you could do a lot worse than Berks.



Jack Attack Commodore 16 Commodore Price £14.99/cart

Presentation: ■■■
Skill level: ■■■
Interest: ■■■
Value for money: ■■

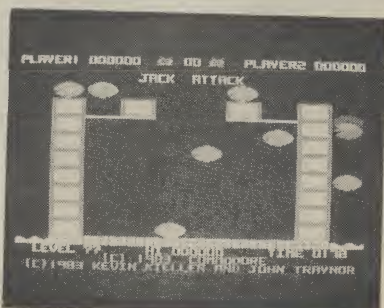
You control Jack — a cute looking blob with feet and antennae. Smiling balloons descend from above and, bounce around generally making a nuisance of themselves.

There are a couple of ways they can be disposed of. The straightforward method is simply to jump on them. Failing this Jack can pull and push the large blocks conveniently lying around the place to crush them. Push the wrong block and you could

end up under a pile of them yourself.

To keep an eye out for the smiling balloons which have an annoying habit of jumping on you when you're not looking. The object is, of course, to destroy everything that moves in order to progress to the next screen.

Certainly an addictive, high quality game, rather like mayhem on a trampoline with a few breezeblocks chucked in for good measure.



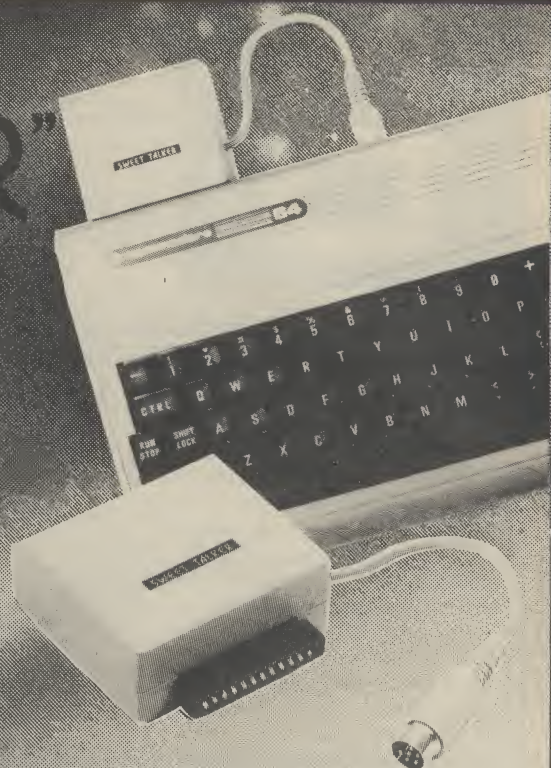
COMMODORE SWEET TALKER

THE CHEETAH "SWEET TALKER" JUST PLUGS INTO THE BACK OF THE COMMODORE 64 BASED ON AN ALLOPHONE SYSTEM, YOU CAN EASILY PROGRAM ANY WORD, SENTENCE OR PHRASE CREATING EXCITING SPEECH AND BROADCASTING IT THROUGH YOUR T.V. FULLY CASED, TESTED AND GUARANTEED.

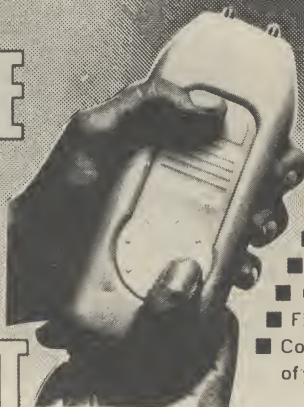
THE "SWEET TALKER" COMES COMPLETE WITH PERSONALISATION TAPE AND FULL EASY TO FOLLOW INSTRUCTIONS.

Mindblowing
at only

£24.95



THE AGE OF THE R.A.T.



CONVENTIONAL JOYSTICKS ARE DEAD!

The Cheetah Remote Action Transmitter is the most sophisticated computer controller available

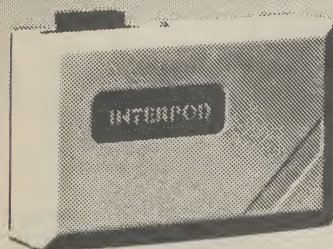
It has these features:

- InfraRed transmission—so there are no leads trailing across the living room. Just sit back in your chair up to 30 feet from your machine.
- Touch control—no moving parts, extremely fast, long life.
- No extra software required.
- Can be used with all Commodore Joystick software.
- Fits comfortably in your hand for long play periods.
- Comes complete with receiver/interface unit which simply plugs into the rear of your Commodore.

Simply incredible at

£29.95

INTERPOD



ONLY
£59.95

Now the VIC 20 and 64 can communicate with PET peripherals

VIC and 64 users

Would you like to be able to access any of these peripherals from your computer?

- 1/2 megabyte disks (Commodore 4040 drive) ● 1 megabyte disks (Commodore 8050 drive)
- 10 megabyte disks (Commodore 9090 hard disk) ● Printers including a wide range of inexpensive IEEE and RS232 matrix and quality printers ● IEEE instrument such as volt meters, plotters, etc. Now you are no longer limited by the VIC or the 64's serial bus. Simply by attaching INTERPOD you can vastly increase the power of your VIC20 and when used with the 64, INTERPOD turns the computer into a really powerful system. With INTERPOD the VIC and 64 become capable of running really professional quality software such as Word-processing, Accounting, Instrument control and many more.

INTERPOD will work with any software. No extra commands are required and INTERPOD does not affect your computer in any way.

Prices include VAT, postage & packing.

Delivery normally 14 days.

Export orders at no extra cost.

Dealer enquiries welcome.

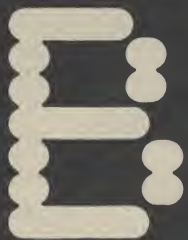
Cheetah, products available from branches of

John Menzies WHSMITH

Rumelows WOOLWORTH Spectrum
dealers and all good computer stores.



Cheetah Marketing Ltd. 24 Ray Street,
London EC1R 3DJ Tel. 01 833 4909
Telex 8954958



BUSINESS

ACCOUNTING FOR MICRO SIMPLEX

Micro Simplex established a name for itself by producing accounting software for the Commodore 8000 series. But it saw the Commodore 64's potential early and adapted its products to suit this humbler yet cheaper machine. Now, Micro Simplex accounts software has achieved considerable status on the 64 but, at £150, it's not cheap. Karl Dallas takes a timely look at its facilities.

The combination of a computer, with its associated jargon, and the complexities of accounting, can be a lethal one: it's bad enough having to come to grips with one or the other, but if you're having to learn about computers as well as accounting (or vice versa), the result can be total mystification. Which is a pity, because, really, they're both quite easy to understand.

Or, at least, that's my verdict after having tried running Micro Simplex's extremely well-documented and easy-to-operate total accountancy package. In fact, I'm sure my accountant's going to wish I'd discovered them both years ago.

As regular readers of this column will have gathered by now, I am a total mathematical idiot, and the reason I got into computers in the first place was because I hoped that they'd help me to make sense of my quarterly VAT returns and my annual income tax assessment. And that's probably why any businessman turns to computerised accounts. Well, so far they've let me down on that score, but it looks as if I can now see the light at the end of the tunnel — thanks to my Commodore and Micro-Simplex.

Opening the box

Micro-Simplex comes on a single disk with a handsome, leatherette-bound 15-chapter manual entitled "Small Business Accounts and VAT Made Simple" and it lives up to its title. It can be configured for either a single-disk, two single disk machines daisy-chained together (you'd need to change the device number of the second machine to 9, but anyone with two disk drives will know how to do that) or a 4040 dual-disk drive.

First, the program has to be configured for your system by running a program called "64-CONFIG" with the write-protect tab removed from your program disk — it always terrifies me, when I have to do that! However, like all Micro-Simplex programs, this is totally menu-driven, so it's dead easy to do.

Besides configuring the program for the appropriate drive set-up, this also formats ("news") a data disk and requires you to enter the company details: name, address (a maximum of four lines), telephone number, VAT number (if any), at the end of which the screen prompt asks:

IS THIS ALL OK (Y/N)

This is the procedure every time data is entered.

Once the company details have been entered they are more or less fixed, because of the fairly tight security procedure which prevents the use of pirated copies and, essentially, also any second-hand sale of the program. You have just one week to send in a registration card and ring up for a special security code to type in from the computer. Without it, you cannot enter more than a single week's data entries. Presumably, if you change your company name, you would need to get a new security code.

Part of this set-up procedure includes stating which VAT quarter you are starting with, the week of that quarter, the date of the Sunday of the start-up week, expressed in DDMMYY format — i.e. April 1 1984 would be typed in as 010484 — the balance at the bank and the balance of cash in hand.

Then you remove the disk, replace the write-protect, turn everything off and on again, and you're ready to go.



Load and run

The main program can be LOADED with the usual LOAD"***", 8 command and it then RUNs automatically. After the title page, the first thing the program does is to re-display the bank and cash account totals, the week number, starting date, and VAT quarter, giving you the opportunity to change anything. This happens every time you start up. You then get the program's main menu (figure 1), to which you can usually return by pressing a simple two-key combination.

It is very important always to close down the system using its own commands — and not just by turning off the computer — because your data files will probably become corrupted if you don't do it the recommended way. The program is rather unforgiving about this sort of thing, and since plugs can get pulled out of sockets accidentally in the best-regulated of businesses, it recommends frequent backing up of disks. Indeed, when you do close down the system, the last screen message is a reminder to do this.

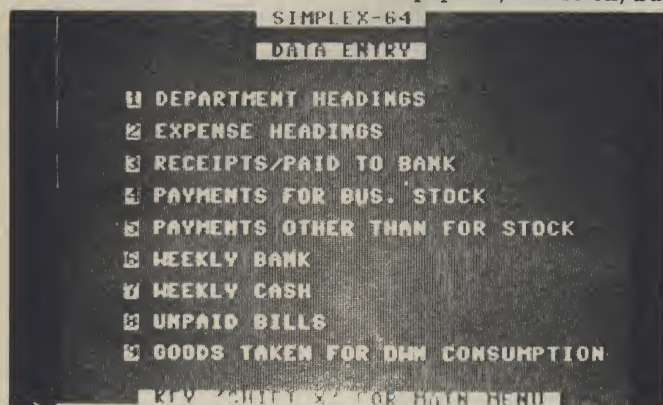
Micro-Simplex is a menu-driven program — displayed below are the main menu options.

```

*****
*****
1 DATA ENTRY
2 DATA VIEW
3 DATA PRINT
4 SUMMARIES
5 PAYMENT OF UNPAID BILLS
6 V.A.T.
7 AUDIT TRAIL
8 PROFIT AND LOSS
9 CLOSE DOWN
*****
SELECT MENU OPTION
*****
```


Menu options

Each menu option produces a sub-menu. For instance, option 1 produces the secondary menu you'll see in figure 2.



Selecting one of the options on the main menu produces a secondary menu.

That gives you some idea of the comprehensive way the program handles your accounts. For instance, few accounts programs in my experience seem to understand that most people don't pay their bills immediately they are received. Even if your cash flow is good enough that you don't have to worry about finding the money to pay them — and who is that lucky, these days? — most efficient companies tend to have a specific part of the month to attend to this unpleasant business.

Also, the fact that you can reclaim the VAT on bills as soon as they are received — which may be helpful to your cashflow if they arrived early in the VAT quarter, as long as you remember not to claim it back when they are actually paid — means that you have to keep a careful check on what's been paid and what is waiting to be paid.

Micro-Simplex does this: just a single example of who well thought-out it is.

Is it for you?

One thing that you've got to realise is that this is a program intended, in its present form, for retailers, or anyone else who does a largely cash business on the sales side. It is flexible enough to handle the various VAT schemes available for different kinds of retail business, but it lumps all the day's takings in any of ten

departments into a single total.

This is fine for a retailer, whose cash till probably merely sorts out cash taken into "sweets", "tobacco", "newspapers", and so on, but

if yours is an invoice-based business, in which you provide goods or services against an invoice, which is paid at a later date, and for which you want to keep a record of those invoices and whether they've been paid, this particular version of Micro-Simplex is not for you.

If you have no more than ten customers, of course, and you only conduct one kind of business, you could allocate each of the ten departments to a different customer, which would help you to keep track of them.

The good news is that a new version of Micro-Simplex for the non-cash business is on the way, though it wasn't ready for review at presstime. This will generate invoices, statements and so on and keep a record of them. Initially, it will be available as a supplementary program disk which will have to be used on its own, but it is planned to include it in the total package at a later date.

Conclusions

Micro-Simplex is a very comprehensive program, but it is also very comprehensible to those who don't understand too much about either accountancy or computers. It is sufficiently good to have earned the approval of the hard-nosed boys of HM Customs and Excise, and they don't please easily.

The manual is very clearly written, though it's a pity it

has no index. In one or two minor places the screen display described in the manual differs from what the screen actually shows, but the differences are slight.

Many businessmen (journalists) for example tend to save up accounts as something to do at the weekend or at the end of a long day working at the real purpose of the business, which is selling widgets or gadgets or whatever, not book-keeping. It's important to make sure you are able to keep your wits about you and not make mistakes in what you type in, because while it frequently checks with you to make sure what you've typed is what you actually meant,

once you've answered that "Y/N" question with a "Y", it can be rather unforgiving if you've made a mistake.

There is a valuable "hot-line" facility (dial 0625-615375 and ask for Dave Wood) to answer any queries you may have, and for the sum of £25 plus VAT, there's a users' club which assures you of free copies of any updates that may be produced.

Having seen and reviewed business packages for most of the popular machines, I have no hesitation in saying that Micro-Simplex is probably the best, especially for tyros like me. And that's something I don't get to say very often. □

Micro-Simplex for the Commodore 64
Micro-Simplex (Sales) Ltd, Freepost, Macclesfield,
Cheshire SK11 8YA
£150 (disk only)
Excellent, easy to use, with good documentation

BUSINESS NEWS

PFS FOR COMMODORE

P and P Micro Distributors has announced that it is to sell the Commodore 64 implementation of the PFS range of business software from American Software Publishing Company. It's already selling IBM PC and Apple versions of the same series.

PFS:File is a disk-based filing system that stores and retrieves information. For simple jobs, you can store up to 1000 forms per disk. But there's a trade-off; the larger the form, the smaller the disk capacity. Each form can contain up to 32 screens with up to 50 items per screen. Better still, you can change the format of the form you've generated provided you haven't filled more than half the disk. Another nice touch is that the function keys are fully implemented. **PFS:File** also lets you print mailing lists.

Working in conjunction with **PFS:File** is **PFS:Report**, costing £64 which lets you organise your data into tables, summaries and

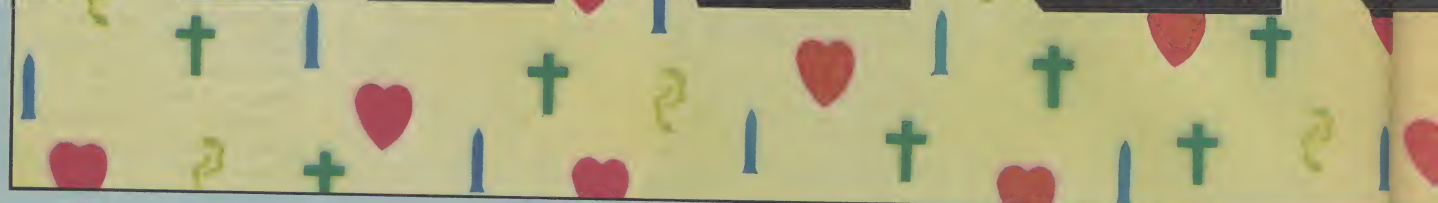
reports. Both packages should be available in the UK by the end of April. More information on 07060 217744.

APPROVED SOFTWARE

Software houses haven't exactly been falling over themselves to put their products on the new Plus/4 computer. One exception is Impex Software which has produced a package called **Company Pac 1-2-3**, the first Plus/4 program to receive the Commodore Seal of Approval.

The program is intended to provide a small to medium business with a total accounting facility on a single disk. The system features sales, purchase and nominal ledgers, each allowing up to 550 accounts per disk. There's also a stock control program with a maximum 500 items per disk and an invoice generator. The package costs £113.79 and is also available for the Commodore 64. That sounds rather expensive now that the Plus/4 itself costs only £150. More details on 01-900 0999. □

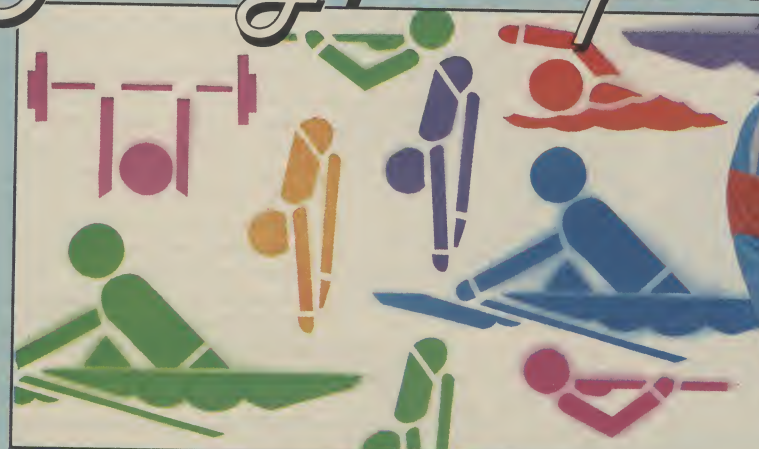
FRANK



STREET HAWK



Daley Thompson's

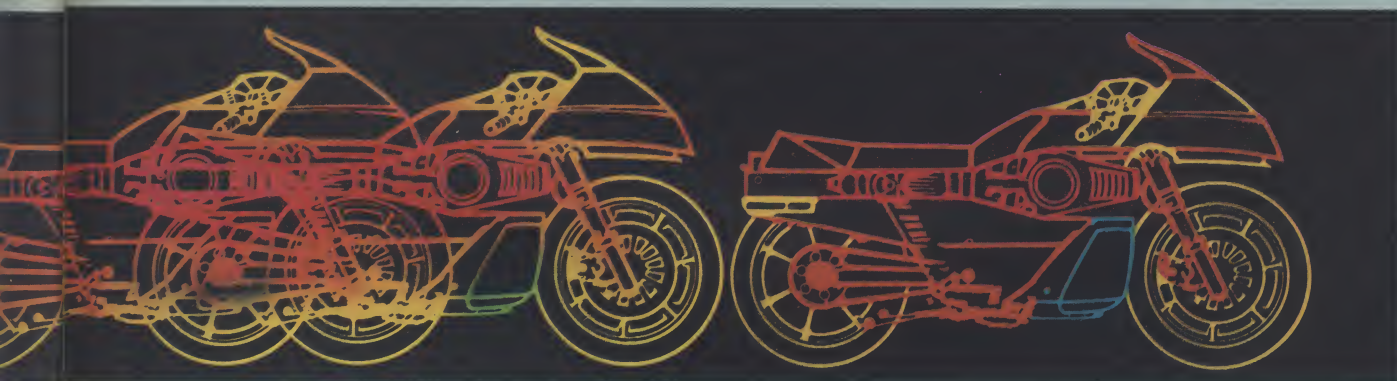


STREET HAWK

SPECTRUM 48K · COMMODORE 6



BRAND
**NEW
BIG
NAMES
BIG
GAMES**



**UPER
TEST**

*Exciting
times ahead
from the
crew at...*



Link to Giant Mainframes and network to thousands of Micro users via your 'phone with free Modems and Comms software in the British Telecom Modem competition.

British Telecom is offering 1000 free gift packs to plug direct into your home 'phone line.

British
TELECOM

MODEM COMPETITION

1000 FREE MODEMS

500 for Spectrum/Spectrum +
350 for BBC Model B
150 for Commodore 64

And if you haven't got a square-type BT phone socket, British Telecom will arrange to alter your installation at no charge!

HOW TO ENTER

(Monday 22nd April to Sunday 5th May 6pm to midnight)

For the 5 questions 'phone

01-627 3000 or
021-449 9944 or
031-225 8999

To get the Tiebreaker Sentence 'phone

01-627 1199 or
0532 455030 or
0632 324444

Complete the entry form using your skill and judgement, and send it off in the next post.

RULES OF THE BRITISH TELECOM MODEM COMPETITION

- 1) The dial-in is available from 6pm Monday 22nd April to midnight Sunday 5th May 1985, when the competition closes.
- 2) Entries must be postmarked the next working day after the questions and tiebreaker were obtained.
- 3) Entries can only be made on the official entry forms and become the property of British Telecommunications plc.
- 4) The competition is open only to residents of the United Kingdom over the age of 18 years. Employees of the Network Marketing Unit of British Telecommunications plc and PARKER REDMILE LTD. and their dependants are excluded. Only one winning entry per household.
- 5) Entries not reaching the competition address before midnight on Thursday 9th May 1985 will not be considered.
- 6) A list of winners will be provided at the competition address. Please send an SAE if you wish to receive it.
- 7) The winners will be picked as follows from entries received on time and properly completed –
The entries for each type of prize pack with all correct answers to the 5 questions and with the tiebreaker sentences judged most apt and humorous by the competition organisers will be chosen, subject to the stock of appropriate prize packs.
- 8) The decision of the competition organisers is final and no correspondence will be entered into. Winners will be notified automatically.
- 9) British Telecommunications plc offers winners requesting BT 'phone socket conversion on entry forms to waive the charge normally made for such work.
- 10) Details of how to get on Prestel/Micronet 800/Telecom Gold will be sent to winners. Subscriptions not included in prize.

OFFICIAL ENTRY FORM

A. Your answers:

- Q1
Q2
Q3
Q4
Q5

B. Tiebreaker Sentence complete (25 words or less in total):

"
.....
..... "

C. If I win, I would like the prize pack for the

- ☐ SPECTRUM/SPECTRUM +
☐ BBC MODEL B (Tick Choice)
☐ COMMODORE 64

D. My home telephone line (* Delete as appropriate)

- (a) already has a square-type BT 'phone socket * or
(b) would need converting to square-type BT 'phone socket *

If (b), the person renting the line from British Telecom must fill in this declaration –
If this is a winning entry, I agree to ask British Telecom to convert my line to square-type BT 'phone socket at a convenient date before 1st July 1985. My line is on Residential rental, is not a coinbox and is not shared service.
I understand British Telecom will not charge for doing the work.

Name (Block Capitals)

Telephone number

Signature

Date 1985 (U)

E. I have read the rules of the British Telecom Modem competition and agree to abide by them. I am over 18 years old.

Signature of entrant

Date 1985

Name (Block Capitals)

Address

Postcode

POST IMMEDIATELY TO:–

British Telecom Modem Competition
PO BOX 73
MITCHAM
SURREY
CR4 2XU

(Postage stamp required)

WINNERS WILL BE NOTIFIED AUTOMATICALLY

MICRO-WAVE RADIO

Are you having some difficulty in making morse signals print correctly using last month's program? Chances are that you are expecting too much from the simple interface circuit. Here's some ideas that will optimize the performance of both the interface and the program.

Because of the nature of the program it is constantly looking not only for the individual elements of morse, but it's also 'auto-tracking' the speed of the code. Under anything other than ideal conditions it can be easily fooled into thinking that noise bursts are real morse characters or that the operator has changed sending speeds.

If you're not sure whether the program is working correctly try connecting a key directly to pins A and C on the user port. If you can send morse to the program using this direct method, then all is well. Secondly, with the interface connected to your receiver tune to a strong, interference free signal. Using a volt-ohm meter check the output of the interface. If the meter swings between about zero and three volts or more in step with the sending station your interface is working properly.

It is very important to keep the audio level from the receiver to the minimum required for dependable operation of the interface, and to maximize the amount of audio versus the noise level. Significant improvements can be made by careful adjustment of not only the audio level but also the RF gain control if you have one (not all receivers do.)

Certainly commercial interfaces and programs exceed the abilities of our simple set-up, but even with a quite expensive interface, I find that critical adjustment of the audio and RF gain levels is necessary to achieve maximum performance.

The Morse keyboard

But let's get on with this month's project. When designing a morse keyboard it is important to keep in mind that the goal is to create machine-precision code characters. The signal com-



Part 3 — transmitting morse code

by Jim Grubbs

Did you get to grips with last month's morse code receive program? If it's inspired you to become a licenced radio operator, you'll enjoy this month's companion keyboard. With it, you'll be able to send morse at up to 50 words per minute just as easily as you type a letter. There's a simple interface to build — too complicated? We tell you where to buy one.

ing from the keyer should contain perfectly formed and spaced morse characters. In principle, this should be a simple task even using Basic. In reality, it's very difficult to maintain the desired precision over a wide range of transmitting speeds.

As an example, one of the key relationships is that each dah or dash should be exactly three times the length of a dit or dot. The method used in all morse keyboards is to read the computer keyboard using a GET command, look up the value of the character received in a table and then go to the actual sending routine to form the character based on the information from the table.

Writing the transmit program

The relationships between the individual elements of each character and word are determined in Basic by using FOR/NEXT loops. So, if a dash is to be three times as long as a dot, the loop should be written as a multiple of three. That is if a dot used a FOR X=1 TO 100 loop a dash would use FOR X=1 TO 300 loop.

It's a nice theory and at relatively slow speeds it comes pretty close. But there are several things about your micro and the nature of Basic that throw a wrench into your good intentions.

FOR/NEXT loops are not entirely linear. If executing a particular loop takes one second to do 1000 times, it does not necessarily hold that it will take two seconds to do the same loop 2000 times.

The other problem is inherent in the nature of Basic itself. If down around program line 200 let's say you call a subroutine at line 250. You might think that the program can jump quickly to the routine since it is almost adjacent to the point where it was called. This is not the case. What actually happens is that the program jumps back to the very beginning and looks all the way down the code searching for the instructions in line 250. Pretty tedious, eh? For some applications Basic is slow anyway and this just adds to the delay.

How the program works

With these considerations in mind, our program has been designed to minimize the effects of such problems. Note that the portion of the program that actually sends the code begins in **line 4**. This is very compact. Using low numbered lines also helps to keep the speed high and the accuracy good.

The principles used are based on an original program by Rick Myers, WB5AYD. Rick emphasizes that nothing extra should be placed between lines 4 and 26. Each addition would degrade the performance of the program.

The rest of the program below **line 100** is for set-up. An array is created (M\$) and then filled with the morse equivalent of all standard characters. Take a look at the first set of data statements. If you are familiar with morse you will note that the table begins with a series of eight 'dits'. This is the standard error signal. The program defaults to this value if you try and send a strange character.

Next appear the special characters: **AR** for end of transmission, **BK** for break, **KN** for private transmissions and so on. The numerals and then letters follow. The table is indexed by computing the ASCII value of the typed character.

Our program also allows several unique features that are particularly helpful during contest operations. By assigning special strings to the function keys, pre-programmed messages can be sent. These are contained just ahead of the data statements in the transmit part of the program.

Sending messages

As presented, pressing the **F1** key sends "CQ TEST CQ TEST CQ TEST DE G3XYZ G3XYZ K." The **F3** and **F5** keys send other messages. You can change these, of course, to suit your own needs. The program has been designed so if you try and send an **F2**, **F4** or **F6** message it will substitute the message stored in **F1**, **F3** or **F5** respectively. If additional messages are desired you can modify **line 52** for the 64 or **line 48** for the Vic-20 and add additional messages.

Pressing the **F7** key causes something special to happen. Often in contest operating situations you are required to

send along a sequential serial number. Our program will take care of that for you. Each time you press the **F7** key the serial number is incremented by one and your contest message is sent. Should you find that you need to send the message again without changing the number, a press of the **F8** key (shifted **F7**) will repeat the process for you automatically.

All kinds of features can be added to this simple program but keep in mind that they are likely to degrade the overall quality of the sending.

If you are a speedy typist, you must be careful not to overrun the keyboard buffer. In the Vic and 64 you normally have a ten character limit. If you exceed this number, characters are lost.

Enhance your program

You could create routines to create and store the pre-programmed messages on to tape or disk. That way you won't have to change the program listing whenever you wish to change programmed messages. There is only so much that can be fitted into an unexpanded Vic. Simply combining both a receive and transmit program into such a machine is a challenge but our program does exactly that.

If you are new to radio and can use some code practice, you could substitute a routine in **line 12** to randomly generate an index into the morse code table. Give it a try and see what you can create. Can you figure out how to make the program send letters only?

The transmit interface

All of last month's discussion about data direction registers applies to sending as well as receiving through the user port. The DDR is of course set to go the opposite direction.

The transmit output appears on **pin K** on the user port. A very simple interface (see diagram) is required to key your transmitter. If you wish only to practice or send to someone in the same room, the tones will come from the television or your monitor in normal fashion.

I've tried to make it easy to integrate the transmit program with the receive portion. **Figure one** is the listing for the combined 64 version while **figure two** is for the Vic-20. To switch back and

```

2 SN=1:GOTO2B
4 FORL=ITOLEN(M$(A)):S$=MID$(M$(A),L,1):I=M:TS=I:IF L=1:""THENM$=""
6 POKEV,P:POKEW,K:FORD=ITOM:NEXT:POKEV,Z:POKEW,U:FORD=ITODES:NEXT:X
8 FORD=ITOT+T:NEXT
10 IFB$<" "THEN 20
12 GETK$:IFK$=""THEN12
14 IFI$=CHR$(00)THENB$="":GOTO32
16 IF K$=CHR$(210) THEN B$="":GOTO190
18 B$=K$:PRINT B$
20 A=ASC(B$):B$=RIGHT$(B$,LEN(B$)-1):IFA<LLTHEN52
22 IFA=SPTHENFORD=ITOWS:NEXT:GOTO10
24 A=A-FF:IFA<JTHEN A=1
26 GOTO4
28 DIMM$(51):FORL=1TOS1:READM$(L):NEXT:S1=20:GOSUB 100
30 POKE 53280,1:POKE 53281,1:PRINT"LBLK")
32 PRINT"[CLS][3CD]SPEED (5 TO 50)[2CR]"S1"LSCL1":
34 INPUTS1:IFS1/50R$1 50THEN52
36 PRINT"[CLS]:"POKE54296,15:V=54276:P=17:Z=0:W=56577:I=a4:U=0
38 I=1200/S1*.125
40 POKE W,U:DR=56579:D1=64
42 POKE 54273,40:POKE 54277,0:POKE54278,128:POKE V,0
44 ES=2600/S1 2:FF=39:LL=90:SP=32:WS=3*T:DL=*T:IFS1 10THENDL=4*T
46 I=1:00=95
48 POKE DR,D1
50 PRINT"[CLS][12SPC]RADIO POST TX: [OFF]":PRINT:GOTO12
52 IFA<12CANDA<14ITHENA=A-132ION A 60XO 54,56,58,60,54,56,58,62
54 F$=" CO TEST CO TEST CO TEST DE G3XYZ G3XYZ G3XYZ ":GOTO10
56 F$=" ORZ ORZ DE G3XYZ G3XYZ ":GOTO18
58 F$=" OSL GL DE G3XYZ ":GOTO18
60 K$=" NR"+STR$(SN)+" 599 G3XYZ B":SN=SN+1:GOTO18
62 K$=" NR"+STR$(SN-1)+" 599 G3XYZ B":GOTO18
64 DATA .....
66 DATA .....
68 DATA .....
70 DATA .....
72 DATA .....
100 REM RADIO POST MORSE FOR C 64
130 DATA E,T,I,A,N,M,S,U,R,W,D,I,G,O,H,V,F
140 DATA L,-,P,G,B,X,C,Y,Z,O,-,5,4,3,2,1
150 DATA -,.,1,6,-,.,7,-,8
160 DATA -,9,0,-
170 DATA .....
180 DIM R$(85):FOR N=1TOD84:READ R$(N):NEXT:RETURN
190 UP=56577:X=0:Y=0:Z=0:R=1:DD=56579
200 POKE DD,0
210 PRINT "[CLS][13SPC]RADIO POST R$:"PRINT
220 POKE UP,0
230 UR=PEEK (UP) AND R:IF UR<R THEN330
235 GET K$:IF K$=CHR$(212) THEN GOTO 36
240 GOTO 230
250 S=0
260 UR=PEEK (UP) AND R:S=S+10
270 IF UR<R THEN Z=(5*Z)+(2*S)/6:Y=(2*Y)+1:X=(2*X):GOTO 330
280 IF S<.60*Z THEN 260
290 Y=(2*Y):X=(2*X)+1
300 UR=PEEK (UP) AND R:S=S+10
310 IF UR<R THEN 300
320 Z=(4*Z+S)/5
330 S=0
340 UR=PEEK (UP) AND R:S=S+10
350 IF UR<R THEN 250
360 IF S<.60*Z THEN 340
370 GOSUB 420
380 UR=PEEK (UP) AND R:S=S+10
390 IF UR<R THEN 250
400 IF S<(2*Z) THEN 380
410 PRINT "":GOTO 230
420 X=(2*X):P=X+Y:IF P/84 THEN P=84
430 PRINT R$(P):X=0:Y=0:0:RETURN

```

Figure 1

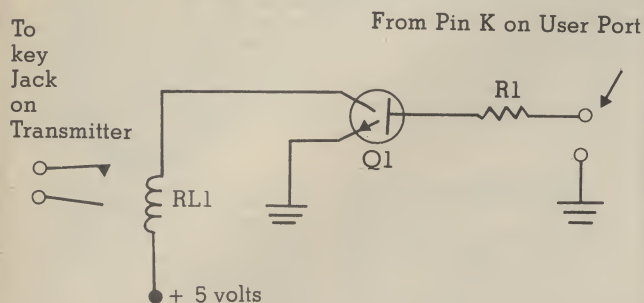
```

2 SN=1:GOTO2B
4 FORL=ITOLEN(M#(A)):S#MID$(M$(A),L,1):M=T:IFS#="-"THENM=DL
6 POKEV,I:TOKEW,K:FORD=ITOM:NEXT:POKEV,Z:POKEW,U:FORD=ITOEK:NEXT:NEXT
8 FORF=1TOT+1:NEXT
10 IFS#:""THEN 20
12 GETK$:NEXT:THEN12
14 IFK$=CHR$(00)THENB#="":GOTO30
16 IF K$=CHR$(210) THEN B#="":GOTO190
18 B#K$:PRINT B#
20 A=ASC(B#):B#=RIGHT$(B#,LEN(B#)-1):IFA:LLTHEN48
22 IFA=SPTHENFORD=ITOWS:NEXT:GOTO10
24 A=A-FF:IFA:1THEN A=1
26 GOTO4
28 DIMM$(51):FORL=1TO51:READM$(L):NEXT:S1=20:GOSUB 100
30 PRINT"[CLS][C3DC]SPEED (5 TO 50)[2CR]"S1"[5CL]":
32 INPUTS1:IFS1=50K$1:50THEN30
34 PRINT"[CLS]":POKE36878,15:V=36876:P=230:Z=0:W=7136:F=64:U=0
36 T=1200/S1:1.25
38 POKE W,U:DR=37138:D1=64
40 ES=(3600/S1):FF=33:LL=90:SF=32:WS=3:T:DL=3*T:IFS1.30THENDL=4*T
42 I=1:00=95
44 POKE DR,D1
46 PRINT"[CLS][C3SPC][REV] RADIO POST TX: [OFF]":PRINT:GOTO12
48 IFA:12ANDA:141THENA=A-132:ON A:GOTO 50,52,54,56,50,52,54,58
50 K$=" CD TEST CD TEST CD TEST DE G3XYZ G3XYZ + ":GOTO18
52 K$=" DRZ GRZ? DE G3XYZ G3XYZ K ":GOTO18
54 K$=" DSL GL DE G3XYZ K "+GOTO18
56 K$=" NR"+STR$(SN)+ " 599 G3XYZ BK ":SN=SN+1:GOTO18
58 K$=" NK"+STR$(SN-1)+ " 599 G3XYZ BK ":GOTO18
60 DATA .....
62 DATA .....
64 DATA .....
66 DATA .....
68 DATA .....
100 REM RADIO POST MORSE FOR VIC-20
130 DATA E,T,I,A,N,M,S,U,R,W,D,F,G,O,H,V,F,
140 DATA L,-,P,J,B,X,C,Y,Z,0,-,5,4,-,3,-,2,-,
150 DATA -,1,0,-,7,-,6,-,8
160 DATA -,9,0,-,7,-,6,-,8
170 DATA .....
180 DIM R$(95):FOR N=1TO84:READ R$(N):NEXT:RETURN
190 UP=37136:X=0:Y=0:Z=0:R=1:DD=37139
200 POKE DD,0
210 PRINT "[CLS][L4SFC]RADIO POST RX:":PRINT
220 POKE UP,0
230 UR=PEEK (UP) AND R:IF UR R THEN330
235 GET K$:IF K$=CHR$(212) THEN GOTO 34
240 GOTO 230
250 S=0
260 UR=PEEK (UP) AND R:S=S+10
270 IF UR=R THEN Z=(5*Z)+(2*S))/6:Y=(2*Y)+1:X=(2*X)+1
280 IF S<.60*Z THEN 260
290 Y=(2*Y):X=(2*X)+1
300 UR=PEEK (UP) AND R:S=S+10
310 IF UR<R THEN 300
320 Z=(4*Z+S)/5
330 S=0
340 UR=PEEK (UP) AND R:S=S+10
350 IF UR<R THEN 250
360 IF S<.60*Z THEN 340
370 GOSUB 420
380 UR=PEEK (UP) AND R:S=S+10
390 IF UR<R THEN 250
400 IF S<(2*Z) THEN 380
410 PRINT " ":GOTO 230
420 X=(2*X):P=X+Y:IF P/84 THEN P=84
430 PRINT R$(P):X=0:Y=0:RETURN

```

Figure 2

Morse Transmit Interface



Q1 — Any NPN transistor such as 2N2222

R1 — 1000 ohm resistor

RL1 — 5 volt DC relay with 75 milliamp coil Radio Shack # 275-243 or equivalent.

forth between the two modes, use a shifted R or T-R for receive and T for transmit. Hold the shift key down and while doing so push the appropriate key, T or R.

While in transmit mode a press of the "back arrow key" located in the upper left hand corner of the keyboard will return you to the speed prompt so that you can change your operating speed without leaving the program.

When receiving, the switch back to transmit will not occur until there is a break in the receiving. If necessary turn the volume down temporarily to get the program back into the transmit mode.

The transmit speed defaults to 20 words per minute. If that's too high, change the value of S1 in line 28 to the speed of our choice.

Keep in mind the limitations of the receive program. Though you may be able to send 50 words per minute with the keyboard, the receive program still will only be reliable up to about 25 wpm. If you have access to a Basic compiler you may want to use it to speed up the program.

Our program will make you an almost instant star in the sending ranks. It has the sound of a very expensive electronic keyer. It should serve your needs for a long time to come.

On tap for next month is reception of radio teletype signals using your Commodore computer. To do that, we have to teach the computer to speak a language called *Baudot*. It's really not as hard as you might think.

We'll also take a quick overview of commercial units available for purchase.

Remember, you can write to me via P.O. Box 3042, Springfield, Illinois 62708 USA or via Commodore User. Please enclose either IRC or U.S. postage if you expect an individual response. You may also wish to listen for my series on computers in the ham shack and listening post currently airing on Radio Sweden International. The reports are part of Sweden Calling DXers during the English broadcasts every other Tuesday. Till next time, cheers from the Grubbs ham-shack.

Here's a few more names to add to last month's short list of interface and software suppliers:

● JEP Electronics of 4 Housman Walk, Kidderminster has a "Morse Reader" program on cassette for both Vic and 64. It includes a diagram for a simple one transistor interfacing circuit, which inputs the signal through the serial port.

● Moray Micro Computing of Enzie Slackhead, Buckie, Moray has the "Didi-Dada" morse tutor for the Commodore 64 which simulates receive and send. It costs £7 on tape and £9 on disk.

● ICS Electronics Ltd, P.O. Box 2, Arundel, West Sussex is offering a game called "Doctor DX" that simulates receiving and transmitting morse during a CQ worldwide DX contest. Probably fun but the cartridge is a bit pricey at £96.95. □

SPECTRUM SIMULATOR FOR THE COMMODORE-64

If you have a Commodore-64 microcomputer, this brilliant program will allow you to use virtually any Spectrum BASIC programs without modification!

Just think of it! — your programs will think you really have a Spectrum! Because your 64 has a proper keyboard plus RS232, disk-handling, and serial port facilities, we are throwing in a lot of the features of ZX-Interface-1 as well.

Only £14.95 with manual in turbo-tape format

SOFTCHIP-64

Plug in cartridge with extra commands.
Our three standard cartridges are:

Programmer's Friend: append, auto, backup, catalog, collect, concat, copy, cursor, dclose, delete, derror, directory, dload, dopen, dsave, dump, func, header, help, kill, lines, merge, mon, record, rename, renu, replace, rescue, scratch, shrink, timeout, trace, user, var. ...the ideal 'toolkit' to make writing and debugging programs quicker and easier... also includes disk commands.

Business Commands: append, backup, blank, catalog, cend, cif, collect, concat, copy, cursor, datin, dclose, derror, directory, dload, dopen, dread, dsave, elif, else, error, genin, header, lwind, numin, pad\$, pctrl, per, pop, record, rename, rout, scan, scopy, scratch, sort, spc\$, swap, swind, print, on.

...all the features to make writing business programs a darn sight simpler... stop wasting time!...

Graphics Pack: bank, blood, break, bsave, cend, chargen, chinkle, cif, clear, col\$, dec, design, dot, draw, elif, else, erase, filter, hex\$, hibase, hitback, hitspr, ink, kill, lines, lsprite, lwind, membot, memtop, mode, move, per, plot, pop, push, reset, rout, scroll, split, sprite, ssprite, stick, swind, voice, volume, wpeak, wpoke.

...for high resolution graphics and sound...includes also structured BASIC language...

Each of these standard cartridges is only £29.95 including a full manual.

We also specialise in cartridges custom-made to your specification for only £34.95 — just ask for our special leaflet containing details of over 100 new commands and facilities. Get a cartridge custom-made for your precise needs — we guarantee the software will work beautifully so order with confidence from the experts.

FOR FULL DETAILS OF ALL OUR PRODUCTS
SIMPLY WRITE OR PHONE OUR HOT-LINE
We accept Access and Visa

WHITBY COMPUTERS LTD
7. CHUBB HILL ROAD, WHITBY, N. YORKS
YO21 1JU
Hotline: 0947-604966

WARP*5

GET A LOAD OF THIS!!!

£9.95
inc. p/p

WARP*5 will speed loading from your 1541 by over 5 TIMES FASTER.

Example: A 154 BLOCK program which normally loads in 1:40 will load with WARP*5 in 18 SECONDS!!

WARP*5 also includes enhanced DOS commands for easier use.

Also includes a bonus program — BOOT MAKER

Convert your machine-code programs to AUTO-RUN-WARP-LOAD from disk.

TOOLKIT MK.2

NOW THIS BEST SELLING COLLECTION OF 1541 DISK UTILITIES IS EVEN BETTER!!

INCLUDES:—

- * FAST DISK COPIER * EVEN FASTER DISK COPIER
- * LOADING ADDRESS RELOCATOR * AUTO RUN MAKER
- * DOS CHANGER * FILE LOCK/UNLOCK * DISK DOCTOR
- * DISK DRIVE MONITOR * DISK LOG * FILE RECOVERY
- * COMPACTOR * FILE COPIER * DISK ERROR LOCATOR
- * DISK ERROR MAKER — MAKES READ ERRORS 20, 21, 22, 23, 27 & 29 WHICH ALLOWS YOU TO BACKUP ALL YOUR VALUABLE PROTECTED DISK SOFTWARE.

ONLY £17.95 inc. p/p

Upgrade available for original TOOLKIT owners.
Phone or write for details.

Overseas orders please add £1.00

Send cheque or P.O. to:

MPS SOFTWARE

36 ALEXANDRA GROVE, LONDON N4 2LF
01-800-3592

JUST LOOK AT THESE PRICES
from

JOTHAN SOFTWARE

TEL: (0639) 830934

SERIOUS SOFTWARE				LEISURE SOFTWARE			
Practical 64	c	29.95		Raid Over Moscow		8.50	
Practical 63	d	34.95		Raid on Bungle Bay		8.50	
Practical 64	d	34.95		Henry's House		7.25	
Superbase 64	d	84.95		Psychodelia		6.45	
Simons Basic	rom	40.95		Beach Head		8.50	
Easy Stock	c	62.95		Bruce Lee		8.50	
Easy File	c	42.95		Cliffhanger		6.75	
Easy Script	c	62.95		Cad Cam Warrior		8.55	
Easy Spell	c	40.95		Pole Position		8.50	
Codewriter	c	79.95		Conan		8.50	
Magpie	d	84.95		Alien		8.75	
Micro Magpie	d	34.95		Le Mans		8.50	
White Lightning	c	16.95		Minder		5.25	
White Lightning	d	24.95		Breakdance		6.75	
Machine Lightning	c	24.95		Spy Hunter		8.50	
Machine Lightning	d	34.95		Brian Jacks Superstar Chail		7.45	
Basic Lightning	c	12.75		American Football		8.50	
Basic Lightning	d	16.75		Zaxxon		8.50	
Gemini Mailist	c	17.95		Vallhalla		12.50	
Gemini Mailist	d	22.75		Fighter Pilot		8.75	
Textpro	c	8.50		Ghostbusters		9.50	
Textpro	d	11.50		Daley Thompson's Decathlon		6.75	
Datapro	c	8.50		Pools Forecaster		12.50	
Datapro	d	11.50		Everyone's a Wally		8.50	
Inventory 64	d	24.95		Football Manager		6.75	
Invostat	cd	26.00		Spy vs Spy		8.50	
Transact	cd	26.95		Flak		8.50	
DFM Database	cd	20.95		International Soccer		12.95	
Home Accounts	c	14.95		BC's Quest for Tyre		8.50	
Stock Aid	cd	26.95		Blockbusters		6.75	
Jetpack Compiler	c	12.75		Strip Poker		8.50	
Jetpack Compiler	d	26.95		Antcipal		6.45	
Simons Basic Ext'n	c	16.95		Castle of Terror		8.50	
The Quill	c	12.45		Nato Commander		8.50	
Reportwriter	c	29.95		Shoot the Rapids		6.75	
Adventurewriter	c	21.95		Scrabble		11.50	
Menuwriter	c	24.95		Forbidden Forest		7.75	
Filewriter	c	29.95		Hunchback		5.80	
HARDWARE				Hunchback II		6.80	
Koala Graphics Tab	cd	69.95		Impossible Mission		7.75	
Centronics Printer		27.95		Suicide Express		6.75	
Cable				Psi Warrior		7.75	
Pixtix (Light Pen)		27.95		Colossus Chess		8.50	
Techno-Illustrator		27.95		Steve Davis Snooker		6.70	
(US Lite Pen)				Postman Pat Trail Game		6.75	
Music Keyboard	+c	29.95		Superted		6.75	
Music Keyboard	+d	29.95		Dukes of Hazzard		6.75	
Quickshot 2 Joystick		10.95		Fall Guy		6.75	
Silk Stik Joystick		7.95		Pitstop		7.75	
Tac 2 Joystick		15.50		Designer's Pencil		10.50	
				Alice in Videoland		7.75	

Prices include postage and packing. Cheque or Postal order payable to

JOTHAN SOFTWARE,
65 Heol Gwys, Upper Cwmwrch, Swansea SA9 2XQ.
Please state which micro

VIZASTAR 64

A SPREADSHEET,
A DATABASE AND
GRAPHICS TOO,
ALL INTEGRATED
INTO ONE AMAZING

PACKAGE... AT AN AMAZINGLY AFFORDABLE PRICE! THE LATEST DESIGN TECHNIQUES COMBINE ULTIMATE EASE-OF-USE, WITH ALL THE SOPHISTICATION OF AN INTEGRATED PRODUCT... ADVANCED SPREADSHEET FEATURES INCLUDE HIGH-SPEED MATHS FUNCTIONS, 1000 BY 64 WORKSHEET, PROGRAMMABILITY, WINDOWS, CELL PROTECTION, SEARCH AND SORT, TEXT EDITING, WORDPROCESSOR COMPATIBILITY, SIMULTANEOUS GRAPHICS... INTEGRATED WITH A 1000-CHARACTER PER RECORD DATABASE, UP TO 250 CHARACTERS PER ITEM... THE ONLY PRODUCT OF ITS KIND FOR THE COMMODORE 64! SUITS MOST PRINTERS, SUPPLIED WITH EXCELLENT HANDBOOK.

OUR PRICE £99.95 £89.00

Jetpack

YOUR PROGRAMS WILL REALLY TAKE OFF WITH DTL JETPACK 64! 100% COMPATIBLE WITH CBM BASIC, JETPACK COMPILES BASIC PROGRAMS INTO MACHINE CODE, RUNNING UP TO 25 TIMES FASTER... AND USING UP TO HALF AS MUCH MEMORY, TO GIVE FASTER LOADING, OR BIGGER PROGRAMS! AND IT EVEN ACCEPTS BASIC EXTENSIONS AND MACHINE CODE ROUTINES AS WELL!

OUR PRICE (DISK) £39.95 £35.95

Master 64

HAS EVERYTHING YOU NEED FOR PROGRAMMING TO TOP PROFESSIONAL STANDARDS! BASIC IV, MACHINE CODE MONITOR, AND 85 POWERFUL NEW COMMANDS... INCLUDING TOOLKIT, BUSINESS BASIC, KEYED ACCESS FILES, DISK DATA COMPRESSION, FORMATTABLE SCREEN ZONES, MULTIPLE SCREENS, DATE CONTROL, REPORT GENERATOR, 22-PLACE ARITHMETIC, SCREEN PLOT, SCREEN DUMP, AND MORE...

ALL FOR ONLY £64.95!

VIZAWRITE 64

VIZAWRITE 64 IS A HIGH-PERFORMANCE, LOW-COST WORD PROCESSOR WITH ON-SCREEN FORMATTING, THAT TAKES FULL ADVANTAGE OF THE 64'S COLOUR, GRAPHICS AND MEMORY FEATURES... AND SUPPORTS VIRTUALLY ANY PRINTER! WITH A COMPREHENSIVE AND EASY-TO-FOLLOW USER REFERENCE MANUAL, VIZAWRITE IS THE ULTIMATE PERSONAL COMPUTER WORD PROCESSOR! AVAILABLE ON CARTRIDGE (£89.95 £78), DISK (£79.95 £68) OR WITH VIZASPELL (£59.95 £48)

*** WANT IT TOMORROW? *** CALL US TODAY! *** ON 01-546-7256

VIZASTAR (DISK)	£99.95	£89.00	MULTIPLAN (US) (DISK)	£79.95	£67.95
VIZASPELL (DISK)	£59.95	£49.95	PRACTICALC (DISK)	£44.50	£39.95
EASYSRIPT (DISK)	£75.00	£65.00	PRACTICALC (TAPE)	£39.95	£34.95
EASYPPELL (DISK)	£50.00	£41.95	HOMEBASE 1-4 (SUPERBASE)		£17.95
SIMON'S BASIC (CART)	£50.00	£41.95	STEPPING STONES (SUPERBASE)		£9.95
FIGARO 64 (DISK)	£86.25	£75.00	PRINTLINK 64 (INTERFACE)		£29.95

PRICES INCLUDE 15% VAT AND ARE CORRECT ON GOING TO PRESS. ORDER BY POST OR PHONE, USING CHEQUE, ACCESS/BARCLAY CARD OR OFFICIAL ORDER. DESPATCH IS BY SAME-DAY 1ST CLASS POST. PRE-PAID ORDERS FREE. PRODUCT DATA AVAILABLE ON REQUEST. REF A31



Calco Software

LAKESIDE HOUSE, KINGSTON HILL, SURREY, KT2 7QT. TEL 01-546-7256

MOVEMEAD DISCOUNT SOFTWARE COMPANY

TITLE	RRP	Our Price	TITLE	RRP	Our Price
Summer Games	14.95	10.30	Psytron	7.95	6.45
Staff of Karnath	9.95	6.99	Spy v Spy	9.95	7.95
Valhalla	14.95	5.99	PSI Warrior	9.95	7.95
The Hobbit	14.95	7.99	Blue Max	9.95	7.95
Havoc	9.95	4.99	Bruce Lee	9.95	8.45
Bristles	8.99	3.99	Beach Head	9.95	7.95
Astro Chase	8.99	3.99	Kosmic Kanga	5.95	2.99
Flip & Flop	8.99	3.99	Spy Hunter	9.95	7.45
Quo Vadis	9.95	5.95	World Cup	6.95	2.99
D/T Decathlon	7.90	5.40	Bear Bower	6.95	2.99
Boulder Dash	8.95	6.45			
Broad Street	7.99	6.49	EDUCATIONAL		
Tir Na Nog	9.95	7.50	English Language	9.99	5.99
Impossible Mission	8.95	7.45	Maths 1	9.99	5.99
Slap Shot	8.95	7.45	Chemistry	9.99	5.99
Break Fever	7.00	5.95	20th Century History	9.99	5.99
Ghostbusters	10.99	8.30	Biology	9.99	5.99
Shoot the Rapids	7.95	6.49	Geography	9.99	5.99
Cad Cam Warrior	9.95	7.95	HARDWARE		
Indiana Jones	9.95	7.95	Quickshot II Joystick	12.95	9.95
Aztec Challenge	8.95	5.95	Currah Speech	29.95	27.95
Chinese Juggler	6.90	2.99	Music Maker	29.95	28.95
Fighter Pilot	9.95	6.95	Joysticks from		4.99

All prices include VAT. Postage and packing is **FREE** on orders in excess of £15.00. All orders of less than this amount are charged 0.75p towards the cost. 1,000's of more titles available for all machines. Send a S.A.E. for full list. Send your cheque/P.O. for the full amount (plus postage, if required), to:—



MOVEMEAD (MARKETING) LIMITED
55 ALESBURY STREET
BLETCHLEY, BUCKS., MK2 2BH
Telephone: (0908) 79232/3



Order despatched within 3 days of receipt of your order and cheque/P.O. All tapes are offered subject to availability. E&OE.



COMPETITION

This month we're giving you the chance to win the superb new Dambusters game plus realistic Airfix models of the very planes that flew to bust German dams. So scramble with those pens!

BOMBS AWAY!



If you've seen our glowing review of the amazing Dam Busters game then you won't want to miss out on this chance to win one.

Those extremely generous people at U.S. Gold have offered us no less than five free copies of Dam Busters to give away as prizes, plus the Airfix model kits of the Dambusters planes.

All you have to do is tell us which German dams were bombed in the famous raid? Who invented the bouncing bombs used in the raid? And where did the inventor get the idea for the bouncing bomb?

Fill in the form and tell us in not more than thirty words what your favourite flight game is and why. Send it to: Dam Busters Competition, Commodore User, Priory Court, 30-32 Farringdon Lane, London EC1R 3AU — not later than 24th May.

SUPERHEROES COMPETITION: RESULTS

Thanks to everybody who entered our Go for Gold competition in March. The answers were 1) Stephen Spielberg 2) The Ark of the Covenant 3) Robert E. Howard and 4) This was a nasty trick question, sorry but Arnold Schwarzenegger has actually won Mr Universe five times. That was a bit sneaky we know, but we had so many entries that it helped us find the winners. No trick questions this month, promise!

There were some good ideas among the suggested titles of films that should be converted in to computer games, though shame on those of you who suggested video nasties. After due consideration the five winners are: David Mann of Luton, Brian Blackmore of Canterbury, Richard Watson of Glasgow, Paul Hendry of Bushey Heath and G. Armstrong from Middlesbrough. Congratulations, those U.S. Gold games are on their way. And so are the twenty runners-up prizes.

Answer to question 1

Answer to question 2

Answer to question 3

Name

Address

My favourite flight game is

Because



YOU can now buy the complete range of "off the shelf" Handic products by post, if you're not near a Handic dealer. All you have to do is make your selection, tick the boxes and send in the coupon with your remittance. We will pay the postage and packing and offer a full 14 day money back guarantee. Handic produce many software and hardware accessories for IBM and compatibles, the Commodore 3000, 4000, 8000 & 700, and of course the Commodore 64.

HANDIC DATABASE

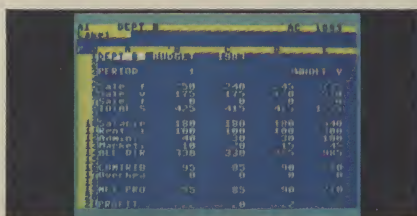
Database, for example, is a brand new, cartridge and disc based software package. Especially designed for both, first time and experienced data base users.

For those of you who need to collate and store information for easy recall, data base can make life easier. The basic package includes a mailing list and 4 different print programs.



CALC RESULT

Calc Result, the financial spreadsheet for the 64, that's ideal for all those domestic headaches, such as loans, mortgages, home budgeting, stock portfolios, tax planning – let alone all those bills! In the office too Calc Result will make calculating, budgeting, simulation, construction so much easier for the business – large or small. This easy to learn package comes in two versions – Calc Result easy (cartridge based) and Advanced (disc and cartridge based with pedagogical manual).



TECHNICAL DATA

- **Spread sheet size**
64 X 254 X 32 pages
- **Consolidation:** Easy with the 32 pages available in Calc Result Advanced
- **Printing:** Flexible printing formats out to most popular printers
- **Graph:** Histogram with scroll through feature rows and columns for printing
- **Colour:** Supports full colour down to individual cell level
- **Help:** Easy help screens available, at all levels
- Calc Result is also available in eight European languages

Applied Calc Result describes a larger number of applications in the area of:—

PERSONAL AND BUSINESS
FINANCE · STOCKS AND SHARES · STATISTICS · MATHEMATICS ·

The user of Calc Result will find among the applications given many useful examples of how to get the most from Calc Result.



THE Handic supermarket basket is full of 'goodies' for your Commodore 64. Here is a brief description of what they all are! Don't forget - if you need any more information, either clip the coupon (and tick column 'A') or give us a ring.

1 Mon 64

An outstanding Machine Code Monitor (cartridge based)

2 Teledata

Communication cartridge for use with the CBM 64, link up with Data-bases like the bank or supermarket, over the telephone lines.

3 Superbox 64

An expansion unit for the Commodore, which features three independent cartridge slots; IEEE interface that is totally transparent; has multi-user capabilities with IEEE; and a re-set switch which activates a cold start on the computer. This unit will connect up to 3 cartridges at the same time, which makes frequent altering between programs simple and reduces wear on the cartridge slot.

4 Vic Rel

Vic Rel (Rel 64) is a relay cartridge for the CBM 64 and Vic 20 which has almost limitless applications, such as control of burglar alarms, garage doors, door locks, electric radiators, lamps, transmitters, model railways, etc.etc.

5 Disc-based games

Handic have a set of disc based games for the Commodore 64, all are great fun and superb colour graphics. At around 9.95 each. Why not treat yourself to a few?

Quantity discounts are available on request - dealer enquiries are also welcome.



6 Diary 64

An ideal program for keeping track of telephone numbers, addresses, appointments, schedules, in fact the ideal time manager for all you sieve-heads.

7 Stat 64

The statistical CBM cartridge which adds 19 new commands to your Basic language. An excellent programming aid for all you statisticians.

8 Graf 64

A CBM cartridge that turns solutions of equations into graphical analysis, what you might call a plotter-jotter.

9 Handic Auto Modem

This modem is the expanded version of the Videotex modem (see illustration). When used together with the Handic Teledata Base 64 this unit enables you to set up your own data base with information.



Videotex Split-Speed Modem

This Split-Speed modem is especially designed to connect with computers over the telephone lines, its facilities include auto-dialling, line control, etc. (BT approval applied for).

10 RS232

A standard V.24 (RS232) interface for connecting the CBM 64 to printers and other peripherals.

11 Bridge 64

A cartridge bridge game for the intelligentsia.

12 Forth 64

A Forth generation programming language for people who know what they are talking about, and want to know even more.

Checklist

COMMODORE 64 - SOFTWARE

CALC RESULT ADVANCED	99.00	A	B
CALC RESULT EASY	49.95		
DIARY 64	19.95		
BRIDGE 64	19.95		
STAT 64	29.95		
REL 64	34.95		
MON 64	39.95		
GRAF 64	29.95		
FORTH 64	34.95		
SSP (DISK BASED DIARY)	12.95		

DISK BASED GAMES

SPACE ACTION	9.95		
SPACE TRAP	9.95		
OISAC	9.95		
Q-HOP	9.95		
THE SHIP	9.95		
MUTANT SPIDERS	9.95		
FOURTH SARCOPHAGUS	9.95		
STELLAR CONFLICT	12.95		
IMAGINATION	12.95		
REAL ESTATE	12.95		

COMMODORE 64 - HARDWARE

VIC SWITCH	97.75		
3M CABLE	4.95		
6M CABLE	7.94		
12M CABLE	9.89		
SUPER BOX	67.87		
RS232 INTERFACE	39.42		
RESET SWITCH	5.98		
APPLIED CALC RESULT	14.95		
NEW HANDIC DATA BASE	62.00		
IBM & COMPATIBLES			
CALC RESULT	316.25		
WORD RESULT	316.25		
CALC & WORD RESULT	534.75		

SOFTWARE & HARDWARE FOR THE COMMODORE 8000/700

CALC RESULT 8000	228.85	A	B
CALC RESULT 700 SERIES	258.75		
WORD RESULT 700 SERIES	258.75		
HARDWARE			
PET SWITCH MOTHER UNIT	172.50		
DAUGHTER UNITS			
-SK/05/8295 1.5 mtr	112.70		
-SK/05/8296 3.0 mtr	112.70		
-SK/05/8296 7.5 mtr	112.70		
-700 SERIES incl. ADAPTOR	126.74		

I enclose cheque/Postal Order for £

Charge my ☐ Access ☐ Visa ☐ American Express

Card No. _____

Signature _____

Date _____

NAME _____

ADDRESS _____

ALL PRICES INCLUDE VAT

CALL US ON 0344 778800
TO PLACE YOUR ORDER TODAY
HANDIC SOFTWARE LIMITED
5, Albert Road, Crowthorne,
Berks. RG11 7LT.

Tick column A for more information and column B for order.

handic
software ltd.

A 5% DISCOUNT MAY BE MADE
ON ORDERS OVER £99.00
POSTAGE AND PACKING P.O.C.

DISCOUNT SOFTWARE

COMMODORE 64

Title	RRP	Our Price	Title	RRP	Our Price
Ghostbusters	10.95	9.20	Alien	9.95	8.35
Hunchback II	7.90	6.65	Choplifter	9.95	8.35
Indiana Jones	9.95	8.35	Valhalla	14.15	12.55
Zaxxon	9.95	8.35	Nato Commander	9.95	8.35
Shoot the Rapids	7.95	6.70	Zim Zala Birn	9.95	8.35
Bruce Lee	9.95	8.35	Summer Games	14.95	12.55
Boulderdash	8.95	7.50	Hobbit	14.95	12.55
Raid On Moscow	9.95	8.35	Great Space Race	14.95	12.55
Beach Head II	9.95	8.35	Select 1	12.49	10.05
Blockbusters	7.95	6.70	All Level 9	9.95	8.35
Forbid'n Forest	8.95	7.50	F15 Strike Eagle	14.95	12.55
Impossible Mission	8.95	7.50	Sherlock Holmes	14.95	12.55
Conan	9.95	8.35	Spy vs Spy	9.95	8.35
Aztec Challenge	8.95	7.50	Pitstop	8.95	7.50
Cadcam Warrior	9.95	8.35	Fighter Pilot	9.95	8.35
Jammin'	6.90	5.80	Manic Miner	7.95	6.70

- * 100's more titles available
- * We also supply disk versions
- * Software for Vic 20, C16 and Plus 4 users too
- * SEND SAE FOR FREE PRICE LIST

INTRODUCTORY OFFER: Order before the end of May and you will receive a voucher worth 25p off your next order. Saving you even more money!

All prices include postage, packing and VAT.
Send cheques and P.O.'s made payable to:—

RK SOFTWARE, 38 Louisville Road, London, SW17 8RW

* * * * * **RK SOFTWARE** * * * * *

Sophisticated Games for Vic 20/CBM 64

Vic/64 Cricket Realistic game of tactical skill and luck. Ball by ball commentary with full scorecard and all the major rules of cricket correctly interpreted. Printer/game save facilities.

Vic Cricket for Vic 20 + 16K.....£6.99
New: 64 Cricket with extra features.....£7.99

League Soccer League title game for 2-24 players with automatic fixtures, action commentary, results check, scorers, league table, cup draw etc. Printer/game save facilities.

League Soccer for Vic 20 + 16K.....£6.99
New: 64 League Soccer with many more features still.....£7.99

Whodunnit 12 guests have gathered for drinks at Murder Manor, but one of them has more than drinks on his mind. Addictive and thrilling detective game for 1 to 6 players, with genuinely different game each time.

Whodunnit for Vic 20 + 8K or any CBM 64 (state which).....£5.99

Top of the Pops Easy to learn game about the music business. For up to 10 players. Includes printer/game save features.

Top of the Pops for Vic 20 + 8K.....£5.99
New: 64 Top of the Pops — even bigger and better.....£6.99

Election Night Special Lead your own Party into the next General Election. A game for 1-3 players. Printer/game save.

Election Night Special for Vic 20 + 8K or any CBM 64.....£5.99

Party 4 Four games to match the progress of your party: Masterword, A Day at the Races, Game X (Strip Poker) and Consequences. Harmless fun (nothing offensive) but good fun.

Vic Party 4 for Vic + 3K or more.....£6.99
64 Party 4.....£6.99

NEW: Adults Only Fun game for 2-10 broadminded players. Lots of cuddling and kissing, plus many other rewards and forfeits: you never know what you'll end up doing, or with whom! Nothing offensive, but you MUST be fairly broadminded.

Adults Only for Vic 20 + 16K expansion.....£6.99
64 Adults Only.....£6.99

Disc versions available for all games — £2.00 extra.

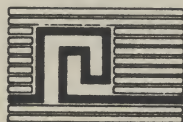
All prices include P&P (UK only). Games sold subject to conditions of sale which are available on request.

Please write or phone for details of our full range.

Sophisticated Games "Dept 333"
27 Queens Road, Keynsham, Avon BS18 2NQ
Tel: 02756 3427

TROJAN

**LIGHT PEN
FOR
COMMODORE 64**



£14.95

inc. VAT and P&P

AND VIC 20

(FOR USE WITH SUPER EXPANDER)

QUALITY PEN PLUS A FIRST CLASS PROGRAM.

THE BEST VALUE PEN PACKAGE AVAILABLE.

- DRAW LINE ● GAMES PLAYING
- DRAW PICTURES FREEHAND
- DRAW BOX ● SAVE & LOAD
- DRAW CIRCLE ● COLOUR FILL 16 colours

Send Cheque or Postal Order for immediate supply.

Mail Order and Export
Enquiries welcome

**EAS
International,
83 Glen Road,
West Cross,
Swansea SA3 5PS**

*All pens manufactured in the UK
by TROJAN*

Telephone:
0792 403613

Telex:
48183 Rogers

MCT 64K RAM BOARD

DESIGNED FOR USE WITH THE COMMODORE C16

Easily fitted and without modification of the main PCB.

The Ram Board will allow 60671 bytes free to BASIC PROGRAMMING

Fully compatible with
existing C16, Plus 4
software.

£59.95

including p&p and VAT

MCT BASIC

DESIGNED FOR USE ON THE CBM 64
COMPATIBLE WITH C16 BASIC BUT WITH
OVER 125 COMMANDS

£10.95

including p&p and VAT

ORDER FORM

Please supply Ram board(s) @ £59.95

..... MCT Basic. Cass.(s) @ £10.95

I enclose my cheque/postal order/Girocheque for £.....

I understand that a full refund less post and packing will be made by MCT if I am not fully satisfied and provided the Ram board is returned within 10 days in its original packing and in a working, new condition.

Signed

Postal address



Micro Component Trading Company
Group House, Fishers Lane, Norwich, Norfolk,
England. NR2 1ET. Telephone (0603) 633005

Micro Swift SPREADSHEET

DEMO CASSETTE OFFER !

By now you are probably aware that Micro Swift, from Audiogenic, is the most powerful and easy to use Spreadsheet for the Commodore 64. And you probably realise that, because Micro Swift is available on both cassette and disk for only £19.95, it represents amazing value for the home user. But you may be wondering, "What can it do for me?" Well, here's your chance to find out!

NOW YOU CAN TRY BEFORE YOU BUY !

Just send us a cheque or P.O. for only 50p, and we will send you a special demo copy of Micro Swift. We've restricted the memory and cut out the Load, Save and Print routines, but in all other respects it's just like the real thing. So, in the comfort of your own home, you can discover the joys of pop-up menus, play with the examples that we'll give you, try out ideas of your own, and you'll soon see how Micro Swift can help you in your family financial planning, in your studies, for club or society administration, or in your business!

Then, when you order Micro Swift from us, we'll refund the cost of the demo! What could be fairer? Send off today!

Audiogenic Ltd, Dept DCU, P.O. Box 88, Reading, Berks. RG6 1AZ.

Audiogenic
PROFESSIONAL SERIES

BUSINESS SOFTWARE

PAYROLL for Commodore 4032, 8000 series & 64

This must be the most comprehensive payroll for its price. Very easy to use. Hourly, weekly and monthly basic, 7 overtime/piecework rates, 4 pre-tax adjustments incl. pension & SSP, 6 after tax, NI, all tax codes & bands. Deduction card printout. Printed payslips or plain paper. This payroll can be adjusted by the user when tax rates change. (no SSP on 4032).

SPECIAL OFFERS FOR THE BUDGET £80.00 + VAT

INTEGRATED ACCOUNTS FOR 8032/96

Purchase ledger, sales ledger, invoicing, stock control, statements, daybook, aged debtors, address labels, (payroll as above), nominal ledger etc. etc.

£575.00 incl. VAT (£529.00 incl VAT cash with order)

INTEGRATED ACCOUNTS for Commodore 64

Purchase ledger, sales ledger, invoicing, stock control, statements, daybook, aged debtors, address labels, nominal ledger etc.

£344.42 inc. VAT cash with order.

Full refund on any item returned within 21 days. Write or phone for details & complete list.

Electronic Aids (Tewkesbury) Ltd.

62 High Street

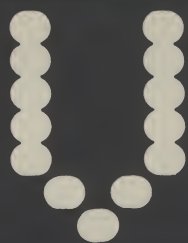
EVESHAM

Worcs. WR11 4HG

Telephone

0386 49339

or 0386 831020



ACTUALS

HOW TO USE EASY ENTER

COLOUR CODES

[BLK]
[WHT]
[RED]
[CYN]
[PUR]
[GRN]
[BLU]
[YEL]

- press CTRL and 1
- press CTRL and 2
- press CTRL and 3
- press CTRL and 4
- press CTRL and 5
- press CTRL and 6
- press CTRL and 7
- press CTRL and 8

[ORG]
[BRN]
[L RED]
[GR1]
[GR2]
[L GRN]
[L BLU]
[GR3]

- press CBM key and 1
- press CBM key and 2
- press CBM key and 3
- press CBM key and 4
- press CBM key and 5
- press CBM key and 6
- press CBM key and 7
- press CBM key and 8

OTHER CODES

[CU]
[CD]
[CL]
[CR]
[HOM]
[CLS]
[DEF]
[REV]
[OFF]
[SPC]
[G < key]
[G > key]

- press 'cursor up' key
- press 'cursor down' key
- press 'cursor left' key
- press 'cursor right' key
- press HOME key
- press CLEAR key
- press INST key (insert)
- press RVS ON key (CTRL and 9)
- press RVS OFF key (CTRL and 0)
- press spacebar
- press CBM key with specified key
- press SHIFT key with specified key

EXAMPLES:

- [3SPC] — press spacebar three times
- [5CD] — press 'cursor down' key five times
- [G > F] — press SHIFT key with 'F'

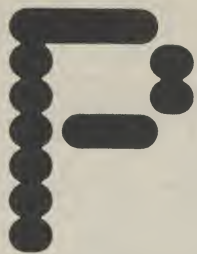
COMMODORE GRAPHIC CHARACTERS

These listings we generally run out on a letter-quality printer, though, and conventional graphics can't be handled on a daisywheel. So some listings are done on a Commodore printer, in which case you may see the standard control codes:

PRINT WHITE
CURSOR DOWN
REVERSE FIELD ON
HOME
PRINT RED
CURSOR RIGHT
PRINT GREEN
PRINT BLUE
FUNCTION KEY F1
FUNCTION KEY F3
FUNCTION KEY F5
FUNCTION KEY F7

FUNCTION KEY F2
FUNCTION KEY F4
FUNCTION KEY F6
FUNCTION KEY F8
PRINT BLACK
CURSOR UP
REVERSE FIELD OFF
CLEAR
INSERT
PRINT PURPLE
CURSOR LEFT
PRINT YELLOW
PRINT CYAN

**EASY
ENTER**



PROGRAMS

MINEFIELD — FOR THE UNEXPANDED VIC 20

PROGRAM 1



Negotiate your way through the menacing minefield and rescue the distressed princess (I'll lay odds it's not Di) in this shamefully sexist game from David Gardiner.

There are two programs. The first sets up the user defined graphics; when you have typed this in and run it, press RUN/STOP and RESTORE then type in and run the second program.

The general idea is to guide the little man towards the little woman, grab her, and lead her to safety. If my efforts are anything to go by she'd be better off finding her own way out! The keys to use are W—up, Z—down, A—left and D—right. The tricky bit is that you can't actually see the mines although you do have a detector which indicates how many mines, if any, are in the immediate vicinity. If you are successful the mines are revealed and you get an action replay of your route.

```

100 REM MINEFIELD
110 REM BY D.GARDINER
120 POKE52,28:POKE56,28:CLR:POKE36879,8:POKE36869,255
130 PRINT"[CLS][CD][WHT][REV]DEFINING CHARACTERS:[6CD]"
140 FORT=0T03:FORTT=0T015:POKE7746+T*22+TT,T*16+TT:NEXT:NEXT
150 B=0:FORT=1T0512:READA:
160 IFA=-1THEN200
170 IFA<0ORA>255THENPOKE36869,240:PRINT"[CD]BYTE"T="["A"] ???":END
180 B=B+A:POKE7167+T,A
190 NEXT
200 IFB<>40502THENPOKE36869,240:PRINT"[CD]?CHARACTER DATA[BSPC]ERROR
[2CU]":END
530 PRINT"[2CD]NOW LOAD AND RUN"
540 PRINT"[CD]MINEFIELD 2/GOOD LUCK<"
550 CLR:END
560 DATA24,24,0,90,60,24,60,126
570 DATA126,66,66,126,66,66,66,0
580 DATA124,66,66,126,66,66,124,0
590 DATA126,64,64,64,64,64,126,0
600 DATA126,34,34,34,34,34,126,0
610 DATA126,64,64,124,64,64,126,0
620 DATA126,64,64,124,64,64,64,0
630 DATA126,64,64,78,66,66,126,0
640 DATA66,66,66,126,66,66,66,0
650 DATA62,8,8,8,8,8,62,0
660 DATA14,4,4,4,4,4,124,0
670 DATA66,68,72,112,72,68,66,0
680 DATA64,64,64,64,64,64,126,0
690 DATA126,90,90,90,66,66,66,0
700 DATA66,98,82,74,70,66,66,0
710 DATA126,66,66,66,66,66,126,0
720 DATA126,66,66,126,64,64,64,0
730 DATA126,66,66,66,74,70,126,0
740 DATA126,66,66,126,72,68,66,0
750 DATA126,64,64,126,2,2,126,0
760 DATA62,8,8,8,8,8,0
770 DATA66,66,66,66,66,66,126,0
780 DATA66,66,66,36,36,24,24,0
790 DATA66,66,66,90,90,90,126,0
800 DATA66,66,36,24,36,66,66,0
810 DATA34,34,34,62,8,8,8,0
820 DATA126,2,4,24,32,64,126,0
830 DATA130,0,40,16,16,40,0,130
840 DATA24,24,0,60,90,24,36,36
850 DATA0,24,24,0,0,24,24,0,129,165,165,189,189,189,255,193,247,
247,247,247,247,193
860 DATA255,0,0,0,0,0,0,0,129,191,191,131,191,191,129,255,36,36,36,
0,0,0,0
870 DATA0,255,231,231,255,255,231,231,255,255,255,255,255,255,255,
255,189,157
880 DATA173,181,185,189,189,255,0,0,0,0,8,8,16,0,102,102,16,249,102,
246,159,159,28,16,16
890 DATA16,16,16,28,0,56,8,8,8,8,8,56,0,129,189,185,165,157,189,129,
255,231,215,247,247
900 DATA247,247,247,255,129,253,253,129,191,191,129,255,129,253,253,
193,253,253,129,255
910 DATA255,31,240,31,240,255,0,0,0,0,0,24,24,0,126,66,70,90,
98,66,126,0,24,40
920 DATA8,8,8,8,0,126,2,2,126,64,64,126,0,126,2,2,62,2,2,126,0,4,
12,20,36,126,4,4,0
930 DATA126,64,126,2,2,2,126,0,126,64,64,126,66,66,126,0,126,2,2,4,8,
16,32,0,126,66,66
940 DATA126,66,66,126,0,126,66,66,126,2,2,126,0,255,255,0,0,0,0,0,
129,191,191,129,253
950 DATA253,129,255,0,24,24,24,0,24,24,0,129,90,36,60,36,90,129,
0,0,0,0,126,12,6,0,30
960 DATA2,2,14,5,0,8,0

```


PROGRAM 2



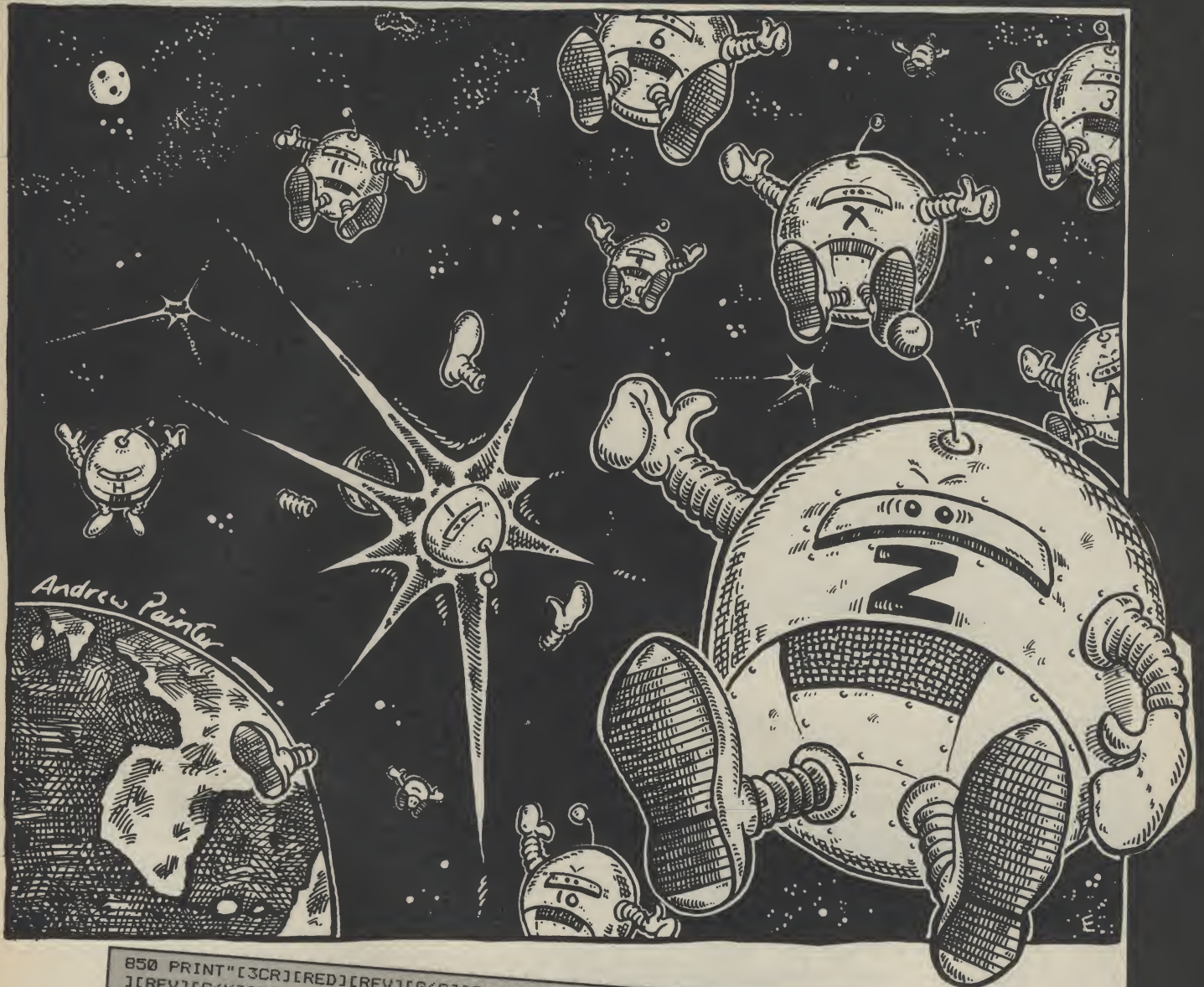
If you're not very familiar with the Commodore 64's keyboard this game from Neil Phillips should help you get better acquainted. As the letters and numbers drop from the sky you have to stop them

by pressing their keyboard equivalents. Failure to hit the right keys results in an earth shattering explosion and the loss of one of your three lives. There are five skill levels so you can

take things easy to start with. Who knows, your typing may improve so much that you're able to type in *Virtuals* listings in half the time! By the way,

when you see '\', you must press the 'f' key. For example, [G>\] means press SHIFT together with the 'f' key.

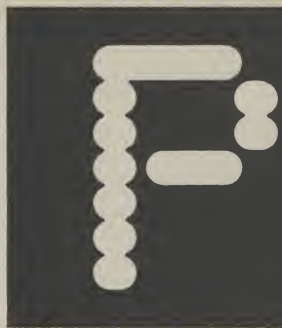
ILLUSTRATION: ANDREW PAINTER



```

850 PRINT"[3CR][RED][REV][G<C][G<V][G<C][G<V][OFF][4CR][PUR][G<M][REV][OFF][G<K
][REV][G<K][REV][OFF][G<G][5CR][BLK][REV][G<C][G<V][G<C][G<V][5CR][YEL][2SPC][O
FF][REV][2SPC][HOM]"
860 PRINT"[HOM][2CD][WHT][24CR][G>U][G>*][G>I]"
865 PRINT"[WHT][11CR][3CD][G>U][G>*][G>I][3CU][9CR][G>U][G>K][G>J][G>I]"
870 PRINT"[WHT][10CR][3CD][G>U][G>K][G>J][G>I][3CU][8CR][G>J][3G>R][G>K]"
880 PRINT"[WHT][9CR][3CD][G>U][G>K][G>J][G>I][3CU][8CR][G>J][3G>R][G>K]"
885 PRINT"[WHT][9CR][G>J][5G>R][G>K]"
886 PRINT"[RED][12CR][G>J][G>R][G>K]"
887 PRINT"[RED][12CR][G>J][G>R][G>K]"
890 RETURN
1000 POKE53280,6:POKE53281,3:PRINT"[CLS][CD][14CR][REV][RED]SKILL LEVELS[2CD][BL
U]"
1010 PRINT"PLEASE SELECT A SKILL LEVEL BY PRESSING THE APPROPRIATE NUMBER.[2CD]"
1020 PRINT"[2CR][RED]1)[3SPC][YEL]SLOW[CD]"
1025 PRINT"[2CR][RED]2)[3SPC][YEL]MEDIUM[CD]"
1030 PRINT"[2CR][RED]3)[3SPC][YEL]FAST[CD]"
1035 PRINT"[2CR][RED]4)[3SPC][YEL]VERY FAST[CD]"
1040 PRINT"[2CR][RED]5)[3SPC][YEL]SUPER FAST"
1100 GETS$:IFS$=""THEN1100
1105 IFS$<"1"ORS$>"5"THEN1100
1110 IFVAL(S$)=1THENP=90
1120 IFVAL(S$)=2THENP=60
1130 IFVAL(S$)=3THENP=40
1140 IFVAL(S$)=4THENP=20
1150 IFVAL(S$)=5THENP=0
1200 M=3:N=0:RETURN
20000 PRINT"[9CR][BLK][REV]PRESS <RETURN> TO START[3CU]"
20010 GETA$:IFA$<>CHR$(13)THEN20010
20020 PRINT"[CLS]":RETURN

```

PROGRAMS

by Michael Birks

DOT RACER — FOR THE COMMODORE 16 AND PLUS/4

A nice-and-easy program for you to type in. The game itself is pretty simple to play, too. Use the 'Q' and 'P' keys to steer your dots between the perilously twisting and

winding tracks. One nice point is that you can set the width of the track at the beginning, up to 20 spaces — and down to as little as you can manage.

```
10 SCNL:R
20 COLOR0,1:COLOR1,2:COLOR4,1
30 CHAR1,10,10,"DOT RACER"
40 CHAR1,10,11,"BY M.BIRKS."
50 CHAR1,10,15,"PRESS ANY KEY"
60 GET A$:IF A#="" THEN 80
70 LET L=10
80 LET S=0
90 LET M=200
100 SCNL:R:CHAR1,5,10,"ENTER WIDTH OF TR
    ACK"
110 INPUT W
120 LET W=INT(W/2)
130 LET L=10
140 LET Y=W
150 LET R=W
160 D=INT(RND(1)*3-1)
170 IF L+D<0 OR L+D>20 THEN 180
180 LET L=L+D
190 LET Y=Y-D
200 LET R=R+D
210 LET N=L
220 GOSUB 1000
230 PRINT "I"
240 LET N=Y
250 GOSUB 1000
260 PRINT "O"
270 LET N=R
280 GOSUB 1000
```

```
300 PRINT "I"
310 GET I$
320 IF I$<>"Q" THEN GOTO 350
330 LET Y=Y-1
340 LET R=R+1
350 IF I$<>"P" THEN GOTO 380
360 LET Y=Y+1
370 LET R=R-1
380 IF Y<1 OR R<1 THEN SCNL:R:CHAR1,10,1
    0,"YOU CRASHED!":STOP
390 LET S=S+1
400 IF S<M THEN GOTO 160
410 SCNL:R:CHAR1,5,10,"YOU MADE IT!":STO
    P
1000 IF N=0 THEN RETURN
1010 FOR I=1 TO N
1020 PRINT " ";
1030 NEXT I
1040 RETURN
```

DISK DIRECTORY PRINTER — FOR THE COMMODORE 64

by Frank Rooney

Do you get a lot of headaches with your floppy disks, trying to keep an up-to-date record of what you've got on them? Here's the answer: a program that lets you print out a disk directory with a single keystroke —

no need to mess about with those boring print commands. Remember, when you're keying in the listing, you must type '#' whenever you see the 'f' sign.



Want to be a star programmer? Never mind, you can still send your programs to Commodore User, provided they're in Basic and not as long as a telephone directory. We'll

consider anything on tape or disk for the Vic, 64, 16 and Plus/4. You could earn yourself a handful of fivers. Entries to: Readers Programs, Commodore User, 30-32 Farrington Lane, London EC1R 3AU.

```
100 POKE53280,6:POKE53281,6:PRINT"[CLS][WHT]"
110 OPEN4,4:PRINT#4,CHR$(27);CHR$(79)
120 PRINT"[CLS][CD][WHT]";TAB(9);"DISK
    DIRECTORY PRINTER"
130 PRINTTAB(12)"[CD]BY FRANK ROONEY"
140 PRINT"[7CD][3SPC][REV] PRESS <SPACE> WHEN
    DISK IS LOADED [OFF]"
150 GETZ$:IFZ#="" THEN170
160 GOTO150
170 PRINT"[CU][38SPC]"
180 OPEN15,8,15,"I0":CLOSE15
190 OPEN1,8,0,"f"
200 GET#1,A$,B$
210 GET#1,A$,B$
220 GET#1,A$,B$
230 C=0:IFA#<>" "THENC=ASC(A$)
240 IFB#<>" "THENC=C+ASC(B$)*256
250 PRINT#4,C;SPC(5-LEN(STR$(C)));IN#=""
260 GET#1,B$:IFST<>0THEN330
270 IFB#<>CHR$(34)THEN260
280 GET#1,B$:IFB#<>CHR$(34)THENIN#=IN#+B$:
    GOTO280
290 C#="":GET#1,B$:IFB#=CHR$(32)THEN290
300 C#=C#+B$:GET#1,B$:IFB#<>" "THEN300
310 PRINT#4,CHR$(34);IN#;CHR$(34);
    SPC(22-LEN(IN#))C#
320 IFST=0THEN210
330 PRINT#4,"BLOCKS FREE"
340 CLOSE1:FORZ=1TO10:PRINT#4:NEXTZ:GOTO120
```


UK SOFT CENTRE

£1 off For every 2 items purchased a discount of £1 will be given against your next purchase. Offer applies to purchases before May 31st 1985

COMMODORE 64 SOFTWARE SPECIALISTS

Arcade/Action	RRP	Our Price	Simulation	RRP	Our Price
Alice in Videoland*	8.95	7.50	Combat Lynx NEW	8.95	7.50
Alien	9.95	8.50	Fighter Pilot*	9.95	8.50
Automan	9.50	8.25	F15 Strike Eagle*	14.95	12.75d
Beach Head*	9.95	7.95	NATO Commander*	9.95	8.50
Beach Head II* NEW	9.95	8.50	Space Shuttle	9.95	8.50
Buck Rogers* NEW	9.95	8.50	Spillfire Ace*	9.95	8.50
CAD CAM Warrior	9.95	8.50	Stellar 7 (Battlezone)* NEW	9.95	8.50
Dambusters* NEW	11.95	10.15	Super Huey (Helicopter)*	11.95	9.95
Drozone* NEW	14.95	12.75d	Games		
Frak!	8.95	7.50	Colossus Chess*	9.95	8.50
Ghostbusters	10.95	9.35	Mastermind	12.95	11.00
Hunchback II	7.90	6.50	Monopoly	12.95	11.00
Impossible Mission* NEW	8.95	7.50	Scrabble	12.95	11.00
International Soccer (Cart)	14.95	12.75d	Utilities/Hardware		
Kong Strikes Back	7.90	6.50	Designer's Pencil	11.95	10.20
Ollie's Follies* NEW	9.95	8.50	Koala Graphics Tablet + Disc	29.95	25.55d
Pole Position*	9.95	8.50	Music Keyboard +	17.95	15.60
Potty Pigeon	7.95	6.50	Panorama (H)*	7.50	6.50
Psytron	8.95	7.50	Psychodelia NEW	39.95	25.00c
Pyamarama	8.95	7.50	Breden's Basic (Disc. tape)	14.95	11.85
Raid on Bungeling Bay*	6.95	5.95	The Quill	19.95	15.80
Raid over Moscow*	9.95	8.50	White Lightning*		
Select One (12 Top Titles)	12.49	10.65	Business		
Sentinel* NEW	9.95	8.50	Calc Result 64 (Adv)	99.00	75.00c
Snake!	9.95	8.50	Easy File	50.00	42.60d
Suicide Express NEW	7.95	6.50	Easy Stock	75.00	63.90d
Tapper* NEW	9.95	8.50	Micro Magpie	39.95	34.00d
Zaxxon*	9.95	8.50	Swift*	30.00	25.55d
Adventure			Transact*	89.95	76.65d
Dragonworld NEW	19.95	18.00d	Wordcraft 40		
Eureka	14.95	12.75d	Extensive range — Call for discount prices.		
Shades NEW	8.95	7.50	Educational		
Spirit of the Stones	14.95	12.75d	Commadore "O" Level	9.95	8.50
The Staff of Karnath	9.95	8.50	Subjects	8.95	7.50
Ultima II NEW	14.95	12.75d	French Mistress Level A/B	9.95	8.50
Valhalla 64	14.95	11.85	Mr T series for children	7.95	6.50
Witch's Cauldron	7.95	6.50	Longman "O" Level Subjects	30.00	25.55d
			Paddington series	7.95	6.50

t = cassette tape d = diskette c = ROM cartridge * = Disc version available

HUNDREDS MORE TITLES AVAILABLE — ALL AT DISCOUNT PRICES

Send SAE for complete list.

Please include 50p for Post and Packing (£1 outside UK) for all orders less than £20.

Cheques or Postal order with order to:

Telephone **UK SOFT CENTRE** 0582 607929

Ltd
P.O. BOX 36 DUNSTABLE BEDS

Superbase 64

TRANSFORMS THE COMMODORE 64 INTO A FULL FEATURED PROFESSIONAL DATABASE SYSTEM, WITH UP TO 1000 CHARACTERS PER RECORD ON UP TO 4 SCREENS... AND UP TO 128 ITEMS PER RECORD, DEFINABLE AS KEY, TEXT, NUMERIC, CONSTANT, RESULT OR DATE. SUPERBASE 64 EVEN HAS A SPREADSHEET AND CALCULATOR CAPABILITY, CALENDAR FUNCTIONS, EASY INPUT FROM WORDPROCESSOR OR DATA FILES, BOTH MENU-DRIVEN AND PROGRAM OPTIONS, SORTING/SEARCHING, FULLY DEFINABLE OUTPUTS... SUPERBASE 64 IS ESSENTIAL IF YOU WANT THE MOST FROM YOUR 64! SUPPLIED ON 1541 DISK WITH EXCELLENT TUTORIAL/REFERENCE MANUAL PLUS AUDIO LEARNING TAPE...

OUR PRICE £99.95 £88.00

Jetpack

YOUR PROGRAMS WILL REALLY TAKE OFF WITH DTL JETPACK 64! 100% COMPATIBLE WITH CBM BASIC, JETPACK COMPILES BASIC PROGRAMS INTO MACHINE CODE, RUNNING UP TO 25 TIMES FASTER... AND USING UP TO HALF AS MUCH MEMORY, TO GIVE FASTER LOADING, OR BIGGER PROGRAMS! AND IT EVEN ACCEPTS BASIC EXTENSIONS AND MACHINE CODE ROUTINES AS WELL!

OUR PRICE (DISK) £39.95 £35.95

Master 64

HAS EVERYTHING YOU NEED FOR PROGRAMMING TO TOP PROFESSIONAL STANDARDS! BASIC IV, MACHINE CODE MONITOR, AND 85 POWERFUL NEW COMMANDS... INCLUDING TOOLKIT, BUSINESS BASIC, KEYED ACCESS FILES, DISK DATA COMPRESSION, FORMATTABLE SCREEN ZONES, MULTIPLE SCREENS, DATE CONTROL, REPORT GENERATOR, 22-PLACE ARITHMETIC, SCREEN PLOT, SCREEN DUMP, AND MORE...

ALL FOR ONLY £64.95!

VIZAWRITE 64

VIZAWRITE 64 IS A HIGH-PERFORMANCE, LOW-COST WORD PROCESSOR WITH ON-SCREEN FORMATTING, THAT TAKES FULL ADVANTAGE OF THE 64'S COLOUR, GRAPHICS AND MEMORY FEATURES... AND SUPPORTS VIRTUALLY ANY PRINTER! WITH A COMPREHENSIVE AND EASY-TO-FOLLOW USER REFERENCE MANUAL, VIZAWRITE IS THE ULTIMATE PERSONAL COMPUTER WORD PROCESSOR! AVAILABLE ON CARTRIDGE (£89.95 £78), DISK (£79.95 £68) OR WITH VIZASPELL (£99.95 £85)

*** WANT IT TOMORROW? *** CALL US TODAY! *** ON 01-546-7256

VIZASTAR (DISK)	£99.95	£89.00	MULTIPLAN (US) (DISK)	£29.95	£67.95
VIZASPELL (DISK)	£59.95	£49.95	PRACTICALC (DISK)	£44.50	£39.95
EASYSRIPT (DISK)	£26.00	£65.00	PRACTICALC (TAPE)	£39.95	£34.95
EASYSPELL (DISK)	£50.00	£41.95	HOMEBASE 1-4 (SUPERBASE)	£17.95	
STIMON'S BASIC (CART)	£50.00	£41.95	STEPPING STONES (SUPERBASE)	£9.95	
FIGARO 64 (DISK)	£86.25	£75.00	PRINTLINK 64 (INTERFACE)	£29.95	

PRICES INCLUDE 15% VAT AND ARE CORRECT ON GOING TO PRESS. ORDER BY POST OR PHONE, USING CHEQUE, ACCESS/BARCLAY CARD OR OFFICIAL ORDER. DESPATCH IS BY SAME-DAY 1ST CLASS POST. PREPAID ORDERS FREE. PRODUCT DATA AVAILABLE ON REQUEST. REF A31



Calco Software

LAKESIDE HOUSE, KINGSTON HILL, SURREY, KT2 7QT. TEL 01-546-7256

POWERFUL UTILITIES FOR YOUR "64"

THE BEST RANGE OF UTILITIES FOR THE 64. WRITTEN BY PROFESSIONALS—SOLD BY PROFESSIONALS

New Improved Version

QUICKDISC

Incorporating Menu Maker NOW EVEN FASTER

Speed up your 1541 disc drive with this new program. Loads most programs at 4 times normal speed. A flexible package that allows you to incorporate a menu and fast loading on your own discs. Also includes a file exchanger for programs put on disc with "Disco" (THE tape to disc utility), another way of making fast load disc programs.

ONLY £11.95

Now operates with printer or second Disc Drive connected.

DOUBLER

Tape Back Up Device

Includes hardware and software. This amazing new cassette port adaptor allows you to make back up copies of "turbo" software. Tests have proved 100% successful. Requires access to two cassette decks. The special software generates a brand new machine copy onto one deck while loading from the other. Fast and reliable, they said it couldn't be done.

ONLY £12.95

FASTBACK

Fast Load Utility

Convert your slow loading software to high speed load with Fastback. The most sophisticated program of its type allows you to produce "turbo" loading versions of most single and multipart software that load independently of Fastback. Simple to use no programming skill needed. Example: Load "The Hobbit" or "Manic Miner" in 150 secs. Tried and trusted (over 2000 sold).

A very professional program.

ONLY £9.95

DISCO

THE TAPE TO DISC UTILITY

We guarantee that this is the best tape to disc utility on the market. Very easy to use no programming knowledge needed. Automatically handles device numbers and multi part programs. Programs auto load and run once transferred and can also be made to fastload with Quickdisc Handy for making your own disc programs auto run.

ONLY £9.95

DISC DISECTOR V2.0

At last a really powerful disc copier and utility program. Incorporates a range of powerful programs. Includes "Fastcopy" Takes just 4 minutes to read and write a whole disc. "Error Copy" automatically reads and writes all error types, now you can make a security back up of those expensive business programs. "Quickdisc" more than halves disc loading time, very useful. "File Copier" allows selective copying from directory. "Track and Sector" a slower but very thorough program. Also includes the following useful utilities: Viewbam, Fast Format, Unscratch, Disc Monitor, Menu Maker, Index, Retitle, Rename, Scratch, Disc to Tape and Tidy. If you have a 1541 you must have Disc Disector. Supplied on disc with full instructions.

ONLY £29.95

COMMODORE CONNEXION

Connect any "Centronics" type printer to your '64. Price includes lead and software on cassette with special disc conversion program.

Simple to use and very reasonably priced.

ONLY £14.95

ROCKET

Fed up waiting for programs to load and save? Rocket is a utility for the programmer, speeds up loading and saving by about 8 times while still allowing for normal speed operations. Does not affect the speed of BASIC as no wedge is used. Programs can also be saved with high speed system to reload independently. A must for serious programmers who have no disc drive.

ONLY £7.95

BIGMOUTH

The superb new speech synthesis program for the '64. Uses "speak" as a basic command. Very easy to use. Can be incorporated into your basic programs. Words are entered in phonetic English, ie. spelt as they sound. Therefore vocabulary is unlimited. Great fun and good for educational purposes.

ONLY £7.95

TAPER

A powerful utility. Works with almost all normal speed software.

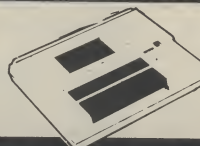
ONLY £5.95

3M SCOTCH DISCS

Lifetime guarantee Box of Ten

SS/DD. £16.00

DS/DD. £23.00



DATA RECORDER

A dedicated data recorder designed for use on the CBM 64 or Vic-20. Specification as C2N but with pause button. Model available for the PLUS4 or 16 at same price.

SATISFACTION GUARANTEED. ONLY £29.95

All prices include P&P and VAT. Send cheque, Postal Order of Credit Card No. Credit Card orders accepted by phone. Callers welcome. Wide range of goods stocked. Trade enquiries welcome. European orders send price as advertised. Outside Europe £2.00 for airmail. Mail order to Evesham Shop please.



MICRO CENTRE

BRIDGE STREET, EVESHAM, WORCESTERSHIRE
Tel: 0386 49641

MICRO CENTRE

1756 PERSHORE ROAD, COTTERIDGE, BIRMINGHAM.
Tel: 021-458 4564

Waiting for the next phenomenon

I'd like to talk about a subject that is near and dear to us all — computer games. Looking over this fine magazine every month (those nice *Commodore User* people send it air-mail), I can see that you folks are still computer game *freaks*. It seems like there are hundreds of computer game companies over there, and they're cranking out thousands of titles. It's obviously your passion, your reason for existence.

I find that very interesting, because *this* side of the Atlantic, computer games are as dead as a doornail.

The year of the Pacman

When the Pac-Man phenomenon struck in 1981, I was impressed enough to start a magazine — you might have seen it — called Video Games Player. It was a very exciting time over here. *Everybody* was going to the arcades and playing video games, most for the first time in their lives.

And the dimes came rolling in. In 1981, video games brought in more money here than professional baseball, football and basketball combined. More money than we spent on movies and records combined. More than twice the take of all the casinos in America combined. It was the biggest thing since the hula hoop. (Did you have them?) There were video game books, magazines, and movies.

To me, video games were an exciting technological innovation. It was hard to believe — not only could we watch stuff moving on the screen, but we could *control* it too! This was amazing way back in 1981. I felt like I was participating in the birth of a new medium. This, I marvelled, must have been what it was like when radio and television were first invented.

A year later, the manufacturers got an even brighter idea — "Let's take these hit arcade games and turn them into cartridges that people can play on their TV sets at home!" It was a phenomenon all over again. Atari sold 15 million of their 2600 game systems, and games like *Space Invaders*, *Asteroids*, and especially *Pac-Man* sold in the millions. American youth was in love with video games. Parents hated it, just like they hated comic books, rock and roll, and break-dancing. Because the "older generation" hated video games, you just *knew* video games were cool!

Death of zap

Then a curious thing happened —

This month, Dan Gutman pauses for thought and ruminates (with a tear in his eye) on his country's loss of enthusiasm for the art of zapping. Will those computers stashed away in the all-American closet ever see the light of day again?



video games dropped off a cliff. Here I was touting them as the next great art form, and they completely died. People stopped going to the arcades. The game systems and cartridges stopped selling. Every week a different software company or video game magazine would go out of business. Video games, as it turned out, are just a fad.

But all was not lost. It wasn't so much that video games were dead. They were just *replaced* — by the computer! The first home computers had hit the market, and though they were like toys compared to the computers coming out today, they were a lot better than video game systems. For one thing, they had keyboards, which added a dimension to gaming and allowed us to program our own games. And computers, besides playing games, could do a whole load of other things, like: word processing, run educational programs, maintain mailing lists, and do a hundred other things. Why would anybody buy a video game system when they could get a real computer for about the same price?

Birth of a legend?

The computer — specifically the Commodore Vic-20 and the Commodore 64 — became the next phenomenon. Suddenly every family in the United States wanted to put a home computer in the living room. It became the latest home appliance. Time Magazine named the computer as its "Man of the Year" in

1982 (the first time in history a human being did not receive the honour).

Suddenly "video games" were out and "computer games" were in. America fell head over heels in love with the computer. Even *parents* loved computers — they're educational, they're fun, and besides, the guy down the street has one so we should have one too, Marge.

Hiding the evidence

That brings us up to today. A lot of those people who bought computers a few years ago have stashed them in their closets. They became confused. A computer is a cool machine, but when you bring it home, plug it in and turn it on, *it doesn't do anything!* When you turn a radio on, you hear something. When you turn a TV on, you hear something and see something — even if it's only Dallas. A computer just *sits* there. People didn't know what to do. "You mean I have to buy software?" "You mean I have to learn programming?" "You mean I have to spend more money to buy joysticks and printers and disk drives and modems before this computer does anything?"

The American public was given the impression that computers could do lots of amazing things, it could do them hundreds of times faster than a human being, and that they were easy to operate. It just wasn't true! Computer games were very popular here for a while, but it wasn't long before the novelty wore off and they stopped selling. Last October, the magazine — my pride and joy — folded. We had to — most of the companies that advertised in Computer Games had gone out of business.

America is confused about computers and computer games right now. Most people agree that "computers are the future", but they don't know what they would do with one if they had one. While computers have revolutionised the American office, only 13% of American households own computers today. These days, the software bestsellers are music programs, art programs, diet programs, and home finance programs.

And I'm sitting here . . . waiting for the next phenomenon.

SAVE SAVE SAVE SAVE SAVE SAVE SAVE SAVE SAVE SAVE

Massive discounts on selected products for the Vic, 64 and Commodore 16!

The widest ever range of deals – specially for **COMMODORE USER** readers.

Some are our own, developed because we saw the need for them: others are the cream of the crop from independent manufacturers, researched by us and selected as best available of their type.

And for you we have the best possible deals on price. The result – the best value for money you will find anywhere.

SIMPLY WRITE Word Processor

Simple, low-cost word processing for Vic or 64

You won't find a better word processor at the price – has all the functions you'd ask for from a £200 package, and it's friendly and easy to use too.

Disk or tape at only **£34.95**

Doodle A drawing package with stunning results. Full drawing and painting facilities with zoom facilities for intricate drawing and editing. More accurate than light pens – as spectacular as Koala at a fraction of the cost! Output for printers including Commodore, Gemini, Okidata, Prowriter and Epson. For the 64.

OUR PRICE £13.99

THE QUILL

Write your own adventures with no programming experience. Comes with full instructions plus easy to use manual.

It's amazing! its £13.95
Normal price £14.95

BOOK

The most useful books we've found for the Vic and 64. Most by the founding editor of Commodore User.

Commodore 64 Subroutine Cookbook: David Busch

For would-be programmers everywhere. It's concise and accurate with excellent line-by-line descriptions guaranteed to turn you into an expert.

The Complete Commodore 64: Dennis Jarrett

Another excellent book – covering all the angles of the 64 to help both beginners and experts alike.

Corner

Getting the Most from Your Vic-20: Dennis Jarrett

Just bought a Vic-20? Then you'll need this comprehensive, carefully designed book to help get to grips with it.

The Good Computing Book For Beginners (3rd edition): Dennis Jarrett

The essential A-Z on computing. Wittily scripted, well thought out but most of all thorough.

STACK FOR THE VIC

Vickit 2: add nine programmer's aid commands and a dozen graphics commands to your Vic. RRP £6.00 chip, £13.00 cartridge ... our price:

EPROM £4.90
CARTRIDGE £11.25

Vickit 3: give a Vic twenty new commands for hi-res graphics. RRP £6.00 chip, £13.00 cartridge ... our price:

EPROM £4.90
CARTRIDGE £11.25

Vickit 4: fast cassette load – loads and saves up to seven times faster. Includes auto-tape position and source text editor. RRP £6.00 chip, £13.00 cartridge ... our price:

EPROM £4.90
CARTRIDGE £11.25

RAM 'n' ROM cartridge: for Stack's Vickit chips ... our price:

£6.00

IEEE Cartridge: run Pet peripherals on the Vic. RRP £38.00 ... our price:

£26.40

Vic Four-slot Switchable Motherboard: plugs four cartridges into one cartridge slot. RRP £15.00 chip ... our price:

£13.80

Storeboard: plugs into the cartridge slot to add 8K extra memory RRP £30.00 ... our price:

£20.50

Now you're talking: Currah

Speech 64 is an allophone speech synthesiser which can say any word you require. It is fully compatible with the 64 and features two voices and on board text to speech firmware. Comes with complete manual for just **£24.95** Normal price **£29.95**.

KEEP IT CLEAN

MICROGUIDE KEYPLATES

Fits neatly over your computer keys. Gives easy-to-read list of commands. Placed exactly where you want it as part of the keyboard. Made of durable plastic. Wipe clean pen for function key identity and space for notes. Plus a ring-bound stay-flat booklet "Error messages and how to deal with them".

For the 64.
Our price £5.95

COMPUTER COVERS £3.00
CASSETTE COVERS £2.50
DISK DRIVE COVERS £3.00

VICTAPES the pick of reader's programs for the Vic
VICTAPE ONE – ten games for any Vic
VICTAPE TWO – ten games for expanded Vics

PRICE: £1.99 PER TAPE
SPECIAL – both VicTapes for **£3.00**

Fantastic Value
10 GAMES
for £1.99

MultiCalc is a Deal
For Readers product

GOLDEN GREATS

OUR PRICE:

£6.99 per pack of three.

Vic Games from Audiogenic

PACK ONE: Amok • Alien Blitz • Bonzo

PACK TWO: Country Garden • Kaktus • Mangrove

PACK THREE: Shifty • Pit • Golf

All-time favourites - action and colour, great for the kids.

SPECIAL - ORDER ALL THREE PACKS FOR £17.99

STACK FOR THE 64

Four-slot Switchable Mother-board for the 64

Instant expansion for the 64. Plugs into the cartridge slot, lets you plug in up to four cartridges.

Normal: £38

£29.95

Instant Interfaces

Plug any printer into your 64

Run any printer (or plotter, or maybe even modem) on your 64. These interfaces by Stack convert the 64's odd IEEE signals into something the printer can handle.

Centronics Interface:

Normal £24.00
£22.00

RS-232C Interface:

Normal £33.00
£29.95

The HELP Cartridge for the 64

All those extra commands you want!

A programmer's aid cartridge for the 64 from Stack. Adds twenty toolkit commands to Basic (auto line number and renumber, find, step, trace, etc: plus hex-dec converter) and a comprehensive monitor and disassembler and several single-key disk-handling commands.

Normal price £25.00

OUR PRICE £22.50

The Arrow Cartridge

Tape save/load seven times faster!

£26.00

This Stack cartridge for the 64 gives not just the high-speed cassette operation ... but also a full version of the TIM Machine Language monitor ... and fast-forward to any of nine predetermined positions on a cassette ... and a hex-dec converter with hex arithmetic built in.

CBM 64 Basic Compiler

This turns your normal Basic programs into superfast machine-language-speed code!

Disk:

OUR PRICE £15.00

SPECIAL CARTRIDGES FOR THE 64

The Commodore User Toolkit Cartridge

... for easier programs

AUTO automatic line numbering
DELETES deletes specified lines
FIND lists all lines containing specified string
LINES calculates number of lines in your program
MERGE merges program from disk or tape
RENU renumber program

DUMP lists names and current values
VAR lists variable names

DESIGN multi-colour sprite editor
SPRITE sets position, colour, mode
HITBACK detects sprite hitting background
HITSPR detects sprite hitting another sprite

MON Pet-type machine code monitor
USER add new commands

FUNC defines function keys

SHRINK removes REMs and all unnecessary spaces

CURSOR puts the cursor at specified position

... and much more

PRICE: £27.50

CYBERGRAM

DESIGN YOUR OWN VIC SCREENS

Brilliant idea, though it's simple really; the Cybergram Designs Vic-20 Graphics Aid Pack is a set of overlays and printed sheets on which you can immediately see and the POKE locations you need for display and colour; and you can use successive sheets to set up a specific 'storyboard' from which to organise and visualise the sequences in a graphics program.

Your pack includes planner sheets for the standard 22 x 23 screen and plotter sheets for the 1023 x 1023 hi-res graphics using the Super Expander; you also get a set of handy character designer sheets that simplify the construction of your own shapes.

Very neat, very clever - and really useful too ... and at a discount from the normal RRP of £4.50.

Normal Price **£4.50** OUR PRICE **£4.20**

Instant database for your 64

INFOTAPE

Why buy lots of different data storage systems when just one will do? INFOTAPE 64 is a powerful yet easy to use database system for tape users, and stores up to 3,000 data items with you defining the number of fields per record. Totally flexible; and interpretive in nature, with the user having the command of what data is stored and how. And file characteristics may be changed after the file has been created. Powerful 19-function calculator is built-in (giving spreadsheet capability); batch processor can update or delete all or selected records. A full report generator is included to provide anything from a gummed label for a mail shot to tabular reports...

Normal price: **£16.95** OUR PRICE: **£9.95**

64 Classics 3 Great Games



for only **£6.99**

We've picked out four of Bubble Bus' classic games. (a) Exterminator (b) Widows Revenge (c) Flying Feathers (d) Kick Off.

You can have your choice of any three for the price of one. Please remember to mark clearly your three choices on the order form.

Zap-proof joystick £7.95

Stack claims this joystick is "almost" unbreakable: we'll vouch for that. Non-slip rubber sucker feet, two fire buttons, shaped grip.

COMMODORE

Deals for Readers

To take advantage of these offers just fill in the order form on the back page

01-241 2448

Pixel Pads all you need for excellent screen design!

All the programming information you need to create really stunning screens and user defined sprite graphics, and dozens of design sheets to work from. For the 64.

OUR PRICE £4.95

COMMODORE 16

Handy gadget plugs in to the Commodore 16 joystick port and allows you to use any "D" type Atari/CBM/Vic-20 joystick. Eg: the Stack Zap-proof.

£3.95

Deals for Readers

VICSPRINT for Vic & 64 Trippler Interface

Serial IEEE to Centronics converter which doesn't use any program memory space. Plugs into the user port on Vic or 64 to interface with most printers (either daisywheel or dot matrix), and will work with most commercial packages. A RAM Electronics product RRP £49.95

Normal price: **£49.95**
OUR PRICE: **£45.95**

Spectrum Emulator

Whitby Computers' amazing tape makes the Commodore 64 think it's a Spectrum 48K, bit of a downgrade? True, but now you can enter Spectrum basic programs and magazine listings. Includes manual on how to program in Spectrum basic.

Available on tape at: **£14.95**

1541 Express

Fantastic plug-in cartridge speeds up disk loading and transfer by up to 33% recommended in our October edition and now an even better bargain, down to.

£31.95
Normal price **£34.95**

SAVE SAVE SAVE SAVE SAVE SAVE SAVE SAVE SAVE SAVE

• Order Form •

Prices here include VAT and P&P within the UK and Ireland. For delivery elsewhere, please add overseas postage on each item as follows:

Item	Europe	Elsewhere
Books, cartridges, assembler	£2.00	£4.00
Tapes, video splitters, tee-shirts, covers	£0.50	£1.50
Everything else	£1.00	£2.00

All offers subject to availability; please allow 28 days for delivery. If there is anything else you would like to see in Deals for Readers, please list below:

BOOKS

THE GOOD COMPUTING GUIDE (any computer)	no. <input type="checkbox"/> at £ 2.95 =
GETTING THE MOST FROM YOUR VIC	no. <input type="checkbox"/> at £ 7.95 =
THE COMPLETE COMMODORE 64	no. <input type="checkbox"/> at £ 7.95 =
SUBROUTINE COOKBOOK (CBM64)	no. <input type="checkbox"/> at £ 7.95 =

FOR THE 64

SPECTRUM EMULATOR	no. <input type="checkbox"/> at £ 14.95 =
PIXEL PADS FOR THE 64	no. <input type="checkbox"/> at £ 4.95 =
RAM 1541 EXPRESS	no. <input type="checkbox"/> at £ 31.95 =
RAM VICSPRINT INTERFACE FOR 64	no. <input type="checkbox"/> at £ 45.95 =
64 CLASSICS PACKS REQUIRED A. B. C. D.	no. <input type="checkbox"/> at £ 6.99 =
SIMPLY WRITE 64 TAPE WORD PROCESSOR	no. <input type="checkbox"/> at £ 34.95 =
SIMPLY WRITE 64 DISK WORD PROCESSOR	no. <input type="checkbox"/> at £ 34.95 =
COMMODORE USER TOOLKIT CARTRIDGE	no. <input type="checkbox"/> at £ 27.50 =
THE QUILL	no. <input type="checkbox"/> at £ 13.95 =
INFOTAPE DATABASE (TAPE)	no. <input type="checkbox"/> at £ 9.95 =
DOODLE GRAPHICS PACKAGE (DISK)	no. <input type="checkbox"/> at £ 13.99 =
CURRAH SPEECH SYNTHESISER	no. <input type="checkbox"/> at £ 19.95 =
HELP TOOLKIT CARTRIDGE	no. <input type="checkbox"/> at £ 22.50 =
CENTRONICS INTERFACE CARTRIDGE	no. <input type="checkbox"/> at £ 22.00 =
RS232 INTERFACE CARTRIDGE	no. <input type="checkbox"/> at £ 29.95 =
64 COMPILER (DISK BASED)	no. <input type="checkbox"/> at £ 15.00 =
64 FOUR SLOT MOTHERBOARD	no. <input type="checkbox"/> at £ 29.99 =
MUSICALC 1 DISK (SYNTHESISER & SEQUENCER)	no. <input type="checkbox"/> at £ 49.99 =
MUSICALC 2 DISK (SCOREWRITER: CBM1525, EPSON)	no. <input type="checkbox"/> at £ 34.99 =
MUSICALC 3 DISK (KEYBOARD MAKER)	no. <input type="checkbox"/> at £ 34.99 =
SPECIAL OFFER: MUSICALC 1, 2, 3	no. <input type="checkbox"/> at £110.00 =
MUSICALC DEMO DISK	no. <input type="checkbox"/> at £ 6.00 =

FOR ANY USER

ZAP-PROOF JOYSTICK	no. <input type="checkbox"/> at £ 7.95 =
VIDEO SPLITTERS	no. <input type="checkbox"/> at £ 1.75 =
MUSICALC DEMO TAPE (AUDIO)	no. <input type="checkbox"/> at £ 3.00 =
COMPUTER DUST COVERS	no. <input type="checkbox"/> at £ 3.00 =
CASSETTE DUST COVERS	no. <input type="checkbox"/> at £ 2.50 =
DISK DRIVE DUST COVERS	no. <input type="checkbox"/> at £ 3.00 =

FOR THE 16

JOYSTICK ADAPTOR	no. <input type="checkbox"/> at £ 3.99 =
------------------	--

FOR THE VIC

VICTAPE 1 (GAMES FOR ANY VIC)	no. <input type="checkbox"/> at £ 1.99 =
VICTAPE 2 (FOR EXPANDED VICS)	no. <input type="checkbox"/> at £ 1.99 =
SPECIAL OFFER: BOTH VICTAPES	no. <input type="checkbox"/> at £ 3.00 =
GRAPHICS AID PACK FOR VIC	no. <input type="checkbox"/> at £ 4.20 =
16K SWITCHABLE RAM PACK	no. <input type="checkbox"/> at £34.95 =
RAM VICSPRINT INTERFACE FOR VIC	no. <input type="checkbox"/> at £45.95 =
SIMPLY WRITE VIC TAPE WORD PROCESSOR	no. <input type="checkbox"/> at £34.95 =
SIMPLY WRITE VIC DISK WORD PROCESSOR	no. <input type="checkbox"/> at £34.95 =
GOLDEN GREATS PACK NO 1 (FOR 8K+ OR MORE)	no. <input type="checkbox"/> at £ 6.95 =
GOLDEN GREATS PACK NO 2 (FOR 8K+ OR MORE)	no. <input type="checkbox"/> at £ 6.95 =
GOLDEN GREATS PACK NO 3 (FOR 8K+ OR MORE)	no. <input type="checkbox"/> at £ 6.95 =
SPECIAL OFFER: ALL THREE PACKS	no. <input type="checkbox"/> at £19.95 =
STACK'S VICKIT 2 EPROM	no. <input type="checkbox"/> at £ 4.90 =
STACK'S VICKIT 2 CARTRIDGE	no. <input type="checkbox"/> at £11.25 =
STACK'S VICKIT 3 EPROM	no. <input type="checkbox"/> at £ 4.90 =
STACK'S VICKIT 3 CARTRIDGE	no. <input type="checkbox"/> at £11.25 =
STACK'S VICKIT 4 EPROM	no. <input type="checkbox"/> at £ 4.90 =
STACK'S VICKIT 4 CARTRIDGE	no. <input type="checkbox"/> at £11.25 =
RAM 'N' ROM CARTRIDGE	no. <input type="checkbox"/> at £ 6.00 =
IEEE INTERFACE CARTRIDGE	no. <input type="checkbox"/> at £26.40 =
VIC FOUR-SLOT MOTHERBOARD	no. <input type="checkbox"/> at £13.80 =
8K STOREBOARD CARTRIDGE	no. <input type="checkbox"/> at £20.50 =

TOTAL ORDER

PLUS OVERSEAS POSTAGE IF ANY

Postal orders, cheques or money orders should be made payable to DEALS FOR READERS. Or use Access (for Orders over £5 only):

NAME THIS IS YOUR DELIVERY LABEL - PLEASE PRINT CAREFULLY

ADDRESS

ACCESS CARD No DATE SIGNATURE

Deals for Readers, Commodore User, The Metropolitan, Enfield Road, London N1 5AZ. 01-241 2448



TOMMY'S TIPS

Tommy is Commodore User's resident know-all. Each month he burrows through a mountain of readers' mail and emerges with a handful of choice queries. The result, before you, is a wage of priceless information and indispensable advice. There's even the odd useful tip as well.

Dear Tommy, Could you please inform me if it is possible to obtain an 80-column card which can be used with my Easyscript?

All I have seen advertised only work with their own program and to change will involve me in a great deal of work and cost, leaving an otherwise terrific program lying idle. Any help you can give me will be gratefully accepted. Unfortunately I do not think you will find any commercial 80-column board that will allow you to use the Easyscript. This is because of the way that the 80-column boards work, which is totally different from the way that a program like Easyscript will print text. Even 'Paperclip', which is identical in every respect to 'The Word', will not run in 80 columns using the Impex board even though 'The Word' does.

While I can recommend the Impex system, there is no way you can get 80 columns without, as you say, a great deal of time and money. The only ray of hope I can offer is to wait and have a look at the Commodore 128 when it appears. Although you still cannot run Easyscript in 80 columns under the '64' mode, there is an 80-column option in '128' mode. Now if someone produced a WP program which could read Easyscript files while in '128' mode and reformat them . . . ! (Software houses, are you listening!)

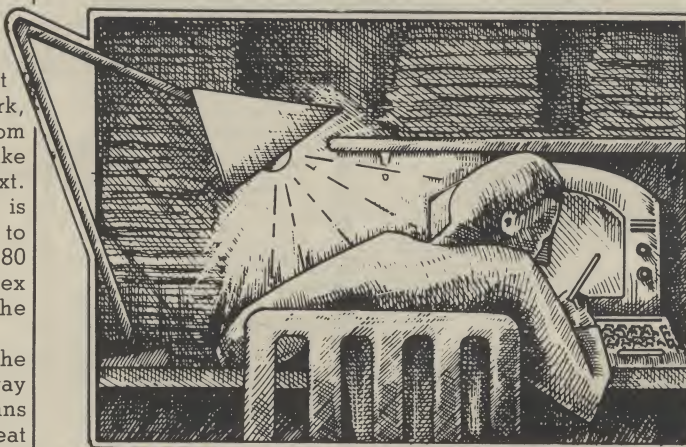
Dear Tommy, I have just recently purchased a Commodore 64 and I think that it is an excellent machine. However it will not load any game which has a superfast or any other speed loading system. There is nothing wrong with the computer because I have normal games that load first time. What can I do? Are there any POKEs or routines that will overcome this problem? I would be very pleased if you could solve

the problem.

This is not an uncommon problem; I have suffered exactly the same thing myself. There is no way you can POKE your way round it because the problem appears to be one of compatibility between the computer and the datasette. The brand new (wide) versions of the datasette seem to work well, older types less so and a very old recorder is unlikely to work at all with Turbo loaders. Even this is not

the whole current program is erased and any data required later has to be re-entered in the next program. Is there a way of putting data from the current program into a reserved area of memory and then retrieving that data for later use in the next, or subsequent program?

What you are doing is to poke the ASCII value for 'SHIFT RUN/STOP' into the first byte



definite, some older recorders load better than some newer ones, but changing the tape recorder does make a difference, despite what Commodore say. I suggest you see your dealer if the computer and recorder are both under warranty and try loading a Turbo program in the shop. If it won't load, then the system is not suitable for the purpose for which it was bought and he should change either the computer or the recorder for one which will load all suitable programs.

Dear Tommy, As a Vic-20 user I occasionally develop multi-part programs by using POKE 198, 1:POKE 631, 131 to load and run the next part of the program, thus discarding redundant data to conserve memory. Could you please explain in detail how these POKE commands work?

A limitation of the above 'POKEs', however, is that

of the keyboard buffer (POKE 631, 131) and then set the 'no of characters in buffer' to 1 (POKE 198, 1). The effect is as if you had typed 'SHIFT RUN/STOP' directly from the keyboard; it will load and run the next program, as you have discovered. Unfortunately, because you are RUNning the next program, all the variables are cleared. A much simpler way is to have a program line 100 LOAD "FILENAME", which will have exactly the same effect of loading and running a program from tape, with the advantage that variables are not reset.

If you want to preserve the contents of arrays then you have to ensure that certain conditions are satisfied. Firstly, the initial program must be bigger than any subsequent program; this can be achieved artificially by setting addresses 45 and 46 to suitable values. Load the largest program of the suite and print the values of addresses 45 and 46

after the program has run. Now add the following line at the start of the initial program, replacing X and Y with the values you obtained:

10 POKE 45, X+50: POKE 46, Y:CLR

(The extra 50 is merely to guard against a slight increase in the size of the biggest program, but if you make a large change then check the values again.)

Secondly, the array names must be the same in all the programs and the arrays must only be dimensioned in the first program. Following these guidelines will ensure that data is preserved from one program to the next.

Dear Tommy, Please could you tell me if and how it is possible to achieve sound input (for voice recognition etc) on the Commodore 64.

There are a couple of products on the market which will allow voice recognition on the 64. The first is 'Big Ears' from William Stuart Systems Ltd. It costs £56.35 and is quite effective; I use one myself and it's great fun! The second product is both a voice input and output device; you can actually record your own voice (or any other sounds for that matter), then play it back under software control. It is called 'Voice Master' and is produced by Covex Inc, Oregon, USA. Although the dollar/sterling fluctuations may be affecting it, it costs around £90 and you should be able to get details from the UK importer, Anirog.

Dear Tommy, I have one or two questions to ask. First of all I am writing a clock program. CT = date, NM = month, LL = year.

```
60 PRINT 'CLR'
70 PRINT 'TIS'
80 PRINT CT '/' NM '/' LL
90 IF TIS = '000000' THEN
110
100 GOTO 60
110 FOR R = 1 TO 60
120 CT = CTH: NEXT R
```


CHROMASONIC

Computer Centres

48 Junction Road, Archway, London N19 5RD. Tel: 01-263 9493/5

238 Muswell Hill Broadway, London N10 3SH. Tel: 01-883 3705

WELCOME TO THE WORLD OF COMMODORE

*Maintenance, Service, Support, Training
all from you No 1 Commodore centre.*

64 BUMPER PACK
contains: 64, C2N, Joystick
Simons 'Basic'
(114 extra commands)
International Soccer cart.
Programmers Ref Guide
CBM Sports Bag
All for **ONLY £295.00**

Commodore 64 guaranteed for 2 years

MODEM & SX64
Complete portable system for
anybody on the move complete
with **FREE** software and 1
year's sub to Compunet.
Special deal price
ONLY £695.00

COMMODORE 64

PROFESSIONAL SYSTEM

Commodore 64
1541 Disk Drive
MPS-801 dot matrix printer
FREE SOFTWARE
Easy Script (wordprocessor)
Easy-file (database)
Introduction to Basic (part 1)

FREE MEDIA

Box of 10 disks
Box of paper

ONLY £599.00

PLUS 4

Built in software: word/pro, data
base, spreadsheet, business gra
NOW ONLY £149.00

COMMODORE 64

STARTER PACK

Commodore 64 computer
cassette unit
Intro to Basic part 1
Quickshot II joystick
A game of our choice

ONLY £255.00

Commodore 64

Commodore 64	£195.95
SX64 portable computer	£649.00
Commodore 16 starter pack	£99.99
1530/1 cassette unit	£39.10
Super Saver cassette unit	£29.95
1541 disk drive	£195.95
Modem	£99.99
MPS-801 dot matrix printer	£195.95
MPS-802 dot matrix printer	£295.95
MCS-801 colour printer	£399.99
DPS-1101 daisy wheel	£399.99
1701 Colour monitor	£193.95
Z80 card	50.00
Commodore joystick	£6.90
Quickshot II joystick	£10.50
Paddles	£13.50
Microguide	£5.95
Plinth for 64 system	£24.95
Vic switch	£97.75
DAM's IEEE interface	£69.95
Surge protector plug	£12.95
CBM 64 to Centronics int	£69.00
Speech 64	£29.95

CMB64 — Epson Int £61.99

Monitors

Commodore 1701	£195.95
Microvitec 1431AP	£246.10
Phillips 12" green	£79.35
64-Phillips cable	£2.50
Monitor plinth	£11.50

PRINTERS

RX80T	£241.50
RX80F/T	£274.85
RX100	£442.75
FX80	£399.95
FX100	£557.75
DX100	£471.50
LQ1500	£1092.50
Juki 6100	£399.95
Daisystep 2000	£263.35
Cannon PW108A	£355.00
64-centronics cable	£19.95
Software for above (cass)	£7.95

Terms

All products are guaranteed for 1 year
unless otherwise stated. Payment may be
made by Access, Barclaycard, Bankers
Draft, Building Society cheque, cash or
postal order. Sorry cheques need five
days for clearance. We reserve the right
to change prices without prior notice.

All prices are inclusive of VAT.
Please check before ordering for carriage
charges.

64 SOFTWARE

	cass disk		cass disk
Flight Simulator II	35.95 42.95	Superbase 64	88.00
Stellar 7	9.95	Anagram Sales Ledger	75.00
Raid Over Moscow	9.95 12.95	Purchase Ledger	75.00
Combat Leader	9.95 12.95	Cash Book Ledger	75.00
Battle for Normandy	14.95	Gemini Mailist	19.95 24.95
Designers Pencil	11.95	Home Accounts	19.95 24.95
Sentinel	9.95	Final Accounts	59.95 64.95
Raid on Bungeling Bay	9.95	Stock Control	19.95 24.95
Ghostbusters	10.99	Easyscript W.P.	69.00
Spirit of the Stones	14.99 14.99	Calc Result (easy) ROM	49.95
		(advanced) ROM	99.00

MEDIA SUPPLIES

Disks by Verbatim

SS/DD 40Tr	£17.95	SS/DD 80Tr	£24.75
b DS/DD 40Tr	£28.92	DS/DD 80Tr	£32.75
Lockable disk storage boxes 40/80	16.50/25.25		

Disks are supplied in boxes of 10

Computer listing paper

11x8.5	13.80	11x9.5	12.65	11x15 1/16	15.52
--------------	-------	--------------	-------	------------------	-------

Paper is supplied in boxes of 2000 sheets

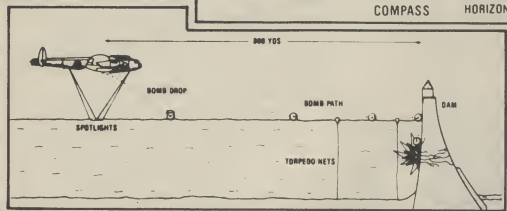
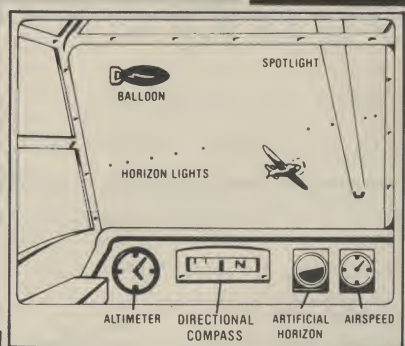
Printer ribbons

MPS-801	6.99	RX80/FX/80	5.00	Daisystep	5.50
MPS-802	7.99	1515/1525	6.25	Juki	1.85

We also supply a range of dust covers, daisy wheels and other ribbons.

At 21.15 hours on the evening of May 16th 1943 a flight of specially prepared Lancaster bombers left Scampton Airfield for Germany. After months of planning and preparation Wing Commander Guy Gibson and his 617 Squadron were at last embarking on a mission so daring that it would guarantee them a place in the annals of history.

The mission would strike at Germany's industrial heartland. If the giant dams of Moehne, Eder and Sorpe could be breached, millions of tons of water would flood the Ruhr, cutting vital water supplies to steelworks and homes, flooding factories, power stations and farmland, and



bring the important Mittelland Canal to a virtual standstill.

Of course the successful conclusion of this raid is now legendary, the young men who took part are acknowledged as heroes; and now U.S. Gold in conjunction with Sydney



Development Corporation and the International Computer Group are giving you the opportunity to relive the excitement, tension and drama of this famous mission.

You will be able to play the part of **PILOT**, flying the Lancaster from Scampton to the target, **NAVIGATOR** using screens maps of Europe,



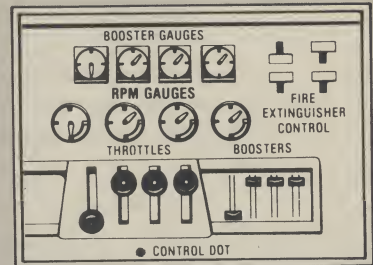


DAMBUSTERS

FRONT GUNNER, REAR GUNNER, BOMBARDIER and FLIGHT ENGINEER.

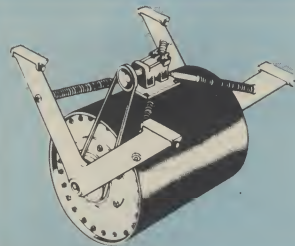
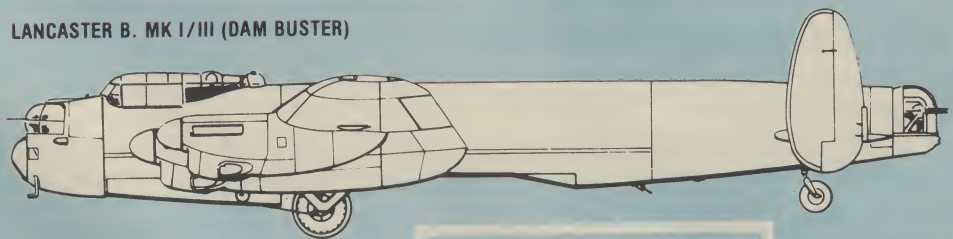
You will have to fly across Europe at low level to avoid radar; lookout for the deadly ME109 night fighters, dodge barrage balloons, spotlights and flak.

At the target you will need all your nerve and skill to control the aircraft and release your deadly payload at just the right moment while avoiding enemy attack.



Game Features: **Superb graphics and sound, realistic joystick control, Pilot's screen and indicators, multiple screen navigators maps, front and rear gunners screens, bomb sighting screens, engineer's indicators, and much much more.** The package comes complete with **comprehensive flight instructions, maps, and confidential**

LANCASTER B. MK I/III (DAM BUSTER)



documents including authentic material by Barnes Wallace and Wing Commander Guy Gibson.

Officially endorsed by 617 Squadron of the R.A.F.

Dambusters is available for **Atari and Commodore 64** computers with versions for **Spectrum, BBC and Amstrad** coming soon.



U.S. Gold is available from all leading computer stores and selected branches of

BOOTS · W.H. SMITH · JOHN MENZIES · WOOLWORTH · WILDINGS

Dealers! For information on how to become a U.S. Gold stockist contact CentreSoft, Lightning, Microdealer, Tiger and all other leading distributors or write to:

U.S. Gold Limited, Unit 10, The Parkway Industrial Centre, Heneage Street, Birmingham B7 4LY. Telephone 021-359 3020. Telex 337268.

WAKELIN

PRINTER BARGAINS — PRICES INCLUDE VAT + CARRIAGE

SEIKOSHA GP100VC..only £149 **BROTHER M1009 only £178**
Made for the Commodore High quality Printer at low
exclusively. price.

Shinwa CPA80-C/100CPS new model for Commodore.....£249 Cable inc.

Epsom RX80FT only £264 **Brother HR5 only £149**
Daisy Step 2000 £264 **Kaga Taxan KP810 £309**
Zero Parallel Printer **Cannon PW1080A £319**
Interface..... £45 **Mannesman Tally MT80+...£219**

Payments to: **STRONG COMPUTER SYSTEMS**

Bryn Cottage, Peniel, Carmarthen, Dyfed.
Tel: 0267 231246 for further details.

COMMODORE 64 AND VIC-20

TAPE BACK-UP BOARD

For the Commodore 64 and Vic-20. When a second CBM type cassette unit is connected to this board, it will make security back-up copies of cassette based software, including Turbo/fast loaders, basic and/or machine code and data files. No additional software is needed. Very user friendly, the back-up copy is made on the second cassette while the original is loading on the first. Priced at £9.50 plus P.P.

1541 DISK MANAGEMENT

Menu driven 20 function 1541 disk management utility. Features include edit track/sector, disk back-up, protect/unprotect plus enhanced and normal disk commands. User friendly. Five programs on one disk for only £8.25 plus P.P.

All orders are sent by first class post. Add 50p P.P. UK, Europe add £1.00 and elsewhere add £2.00. Send cheque/P.O., or send a stamp for full details to:—

CLARK KENT SOFTWARE
15 Bamburg Close, Corby
Northants NN18 9PA

VIC-20 and CBM-64 SOFTWARE HIRE

- 300 TITLES AVAILABLE
- FREE MEMBERSHIP
- TITLES FROM 70p PER WEEK
- HIRE UP TO 3 AT A TIME
- ALL GAMES ORIGINALS

SEND 2 x 17p STAMPS FOR YOUR HIREKIT TO:

VIC-20 SOFTWARE HIRE (CU),
8 THURLAND STREET, NOTTINGHAM.
Please state which machine.

COMMODORE C16/PLUS 4 SOFTWARE NOW AVAILABLE!

C16/ PLUS 4 — SOFTWARE — AT LAST!

THE ULTIMATE IN HIGH-TECH SENSATION — MAN V'S MACHINE. DESIGNED TO BEAT YOUR BRAINS AND PIERCE YOUR EARDRUMS. LOVE IT! HATE IT! BUY IT! — PONTOON — THE GAME YOU WILL LOVE TO HATE! — INTRODUCTORY OFFER OF ONLY **£4.99**

incl. P&P. PO/Cheques to:

VENTUREGATE LTD.
17 HAROLD ROAD, LEEDS LS6 1PR

ASSEMBLER 64. Professional development tool. Powerful assembler/disassembler allowing LABELS, VARIABLES, PSEUDO OPS, CONTROL COMMANDS. Full manual.
Disk £11.99/tape £7.99

DATABASE 64. Menu driven database. Max 30900 records. 255 bytes/record. 25 bytes/field. 15 fields/record. ADD, INSERT, DELETE, AMEND, VIEW records. SEARCH for records on any field including pattern matching. SCROLL through database. PRINT individual records or whole reports. SAVE/LOAD databases to disk/tape. On line HELP screens. Full manual.
Disk £11.99/tape £7.99

PASCAL 64. Powerful structured compiler. FULL implementation of Pascal producing fast 6502 m/c. Also graphics commands + PARALLEL processing — 2 progs. Can be run at same time. Lots more. 70 page manual. Disk **£39.95**

FRENCH 64/GERMAN 64. Two educational packages. Each graded in 9 lessons, teaching & testing verbs, grammar, vocabulary, spelling & sentences.
EACH — disk **£12.95** tape **£8.95** BOTH — disk **£16.95** tape **£12.95**

Zoom Pascal **£24.95** Oxford Pascal **£56.75**
Synthy 64 **£12.50** Bridge (cartridge) **£19.95**
Tiny Basic Compiler **£11.95** Anatomy of 1541 d drive **£14.95**

All prices disk overseas add £3
SAE for catalogue (over 100 programs — databases, word processors, spreadsheets, compilers, education, accounting, utilities, books & much more.

DYNAMITE SOFTWARE dept CU
BCM 8713 LONDON WC1N 3XX.

FREE ASSEMBLER 64 or game with orders over £15. Disk or tape. Other discounts available — see catalogue

COMMODORE 64 DATABASE — DATAFILE

Powerful options include: print all/selective records, delete, amend, save, load, copy, alphanumeric sort, user defined fields, memory check, total numeric fields, multi field interrelational, global and between limits searches, etc. Fully menu driven with comprehensive easy to use instructions. **CBM 64 (compiled): cassette £7.45, disk £10.45.**

COMMODORE 64 WORDPRO — TEXTFILE

Powerful word processor, facilities include — large text buffer, auto centre, variable tab, insert, amend, delete, copy, move text word count, right justify, paging, join files, multiple file handling, print all/part text etc. Fully menu driven with comprehensive easy to use instructions. Great value. **CMB 64 (compiled): cassette £8.25, disk £10.75.**

All programs with full documentation and guarantee and can be used with all direct connect CBM64 printers including 1520 printer/plotter. Also most centronics (with suitable hardware interface). Price includes fast delivery by first class post. Cheques/PO's to:

A & C SOFTWARE
Dept. 3, 75 Oakthorpe Gardens, Tividale, West Midlands B69 2LF.
021-557-8596

NEW RELEASES FROM HARBOURSOFT

FAMILY FUN IN FAULTY TOWERS

HELP BASIL KEEP HIS SANITY AND HIS HOTEL OPEN IN SPITE OF THE HEALTH INSPECTOR! HIT MANUEL AND INSULT SYBIL FOR EXTRA POINTS! ALL YOUR FAVOURITE CHARACTERS APPEAR IN THIS ADVENTURE ADAPTATION WITH A DIFFERENCE. GREAT FUN. COMMODORE 64 TAPE. SPECTRUM 48K TAPE £5.95.

ADULT ADVENTURE WITH JOLLY JACK'S RUN A SHORE!

FOLLOW JACK ON HIS FIRST NIGHT ASHORE AFTER 3 MONTHS AT SEA WITHOUT BUDS OR BOOZE! A FUN AND FROLIC PACKED ADVENTURE WITH NAUGHTY BITS!! COMMODORE 64 TAPE £5.95. SPECTRUM 48K TAPE £5.95 (OVER 18's ONLY).

AND FOR THE REALLY BROAD-MINDED LOVE BYTES!

ADULT FOREFEITS AND REWARDS GAME WITH ARCADE ACTION. "POSITIVELY THE NAUGHTIEST THING YOUR CBM 64 EVER DID!" COMMODORE 64 ONLY. TAPE: £5.95 (OVER 18's ONLY)

COMMODORE 64 RESET SWITCH

Resets Basic but leaves machine-code intact. Audio socket for monitoring included. Two serial sockets also for onwads connection to printers, disk drives etc.

£6.99

CHEQUE OR POSTAL ORDER TO:

HARBOUR SOFTWARE
134 EAST WEARE ROAD, PORTLAND, DORSET
Tel: (0305) 820487
DEALER ENQUIRIES INVITED

Business + Games Software + Hardware for all Commodore computers

Trade supplied with full games and business software for all Commodore machines

All original software — business and games. New releases for CBM 64 every two weeks.

Send your name and address to go onto our mailing list

M.J. Seaward

St Olafs Road, Hill Head, Stratton, nr Bude, Cornwall.

Telephone: Bude 4 179



THE COMPLETE C64 & VIC-20 CATALOGUE OF COMMERCIAL SOFTWARE

If you are an individual, dealer, user group or software library this is a must for you. A catalogue that covers games, utilities, education and business software. You get a description, hardware configuration, price, suppliers names and addresses and independent rating of value for money — all in an easy to refer to format. With over 350Kb of information and thousands of entries it is a must for all serious users — all for only £5.50 UK, £6.50 overseas.

Send cheque or P.O. to Cementis Information, 6 Richardson Road, Stoney Stanton, Leicestershire LE19 6TR.



OMMY'S TIPS

```
130 IF CT < 32 THEN 60
140 CT=1: NM=NM + 1
150 IF NM < 13 THEN 60
160 NM=1: LL=LL + 1
```

Why should CT jump one first time TI\$ = '0000000', and then jump two every time after that. I am at my wit's end.

Secondly, as I am thinking of building the home controller covered by your magazine, do you know if there could be any damage done to the Commodore 64 if I left it powered up 24 hours a day?

There are two problems with your program; firstly you have got CT = CT+1 inside a loop which will take its value over 60 every time. Secondly, even if you took the CT = CT+1 outside that loop it would still not work because you are testing TI\$ each time. TI\$ only alters once every second whereas Basic, slow as it is, will go through the lines 60-90 several times in one second, hence the jump.

What you need to do is test the clock variable TI, which alters 60 times every second. By testing to see if TI is near 0 you will get the effect you want. Note that you cannot test if TI=0 because you might not do the test at the exact time; TI is constantly changing. Your program also does not take account of the differing numbers of days in each month.

The following program is based on yours, but steps correctly for each month as well (line 20 is merely to set the initial date). By using strings instead of variables you do not have to clear the screen each time, since the positions of the numbers are always the same; this avoids the annoying flicker you get when clearing the screen each time. I leave it to you to add the necessary code to check for leap years!

```
10 DIMDAYS (12)
15 FORA=1 TO 12:
  READDAYS (A): NEXTA
20 CT=1: CT$=" 1":
  NM=1: NMS=" 1":
  LL=1985: LL$="1985"
```

```
60 PRINT [CLS]
70 PRINT [HOM]: TI$
80 PRINTCT$: "/"; NMS; "/";
  LL$
90 IF TI < 2 THEN 110
100 GOTO 70
110 CT=CT+1: IFCT >
  DAYS (NM) THEN CT=1
120 CT$=RIGHT$ (STR$
  (CT), 2)
130 IF CT > 1 THEN 70
140 NM=NM+1: IF NM > 12
  THEN NM=1
150 NMS=RIGHT$
  (STR$(NM), 2)
160 IF NM > 1 THEN 70
170 LL=LL+1
180 LL$=RIGHT$ (STR$
  (LL), 4): GOTO 70
1000 DATA31, 28, 31, 30, 31,
  30, 31, 31, 30, 31, 30, 31
```

On your second query, there is no reason why your computer cannot stay switched on 24 hours a day, 7 days a week provided you take sensible precautions:

- do not keep either the computer or the transformer inside an enclosed space; ensure there is plenty of air circulation;
- for the same reason, do not keep any form of cover over the computer or leave anything laying on top of the transformer;
- ensure that the fuse in the mains plug is of the correct rating (1 amp);
- do not leave the computer where it is in bright sunlight.

Dear Tommy. My Vic-20 will not accept programs which are published in your magazine from the keyboard although it will accept games from the cassette. In your column (October '84) you suggested a program to check a faulty RAM chip. Every time I type in this program I get an error message.

I returned my Vic to the dealer and asked them to check it, explaining the problem. They returned it with a job card which read as follows: "This computer has been checked with programs from the user's manual and no fault has been found".

I again tried the above program and got the same reply on the screen. How do I find out if my computer is working properly, please help!

I am afraid you have typed the program exactly as printed without noticing the 'control commands' are like the *Vic-tuals* listings. [CLR] means 'press the SHIFT key and the CLR/HOME key'. Likewise [CUR UP] means press the 'cursor up' key. On checking the printing I did notice one error; line 50 should have a 0 between <> and THEN. If you make these changes the program will run correctly.

Dear Tommy. I am thinking of buying the 'Big Mouth' speech synthesizer for my Commodore 64 and I wondered if you could tell me if it works with the Simon's Basic cartridge?

I am afraid that *Bigmouth* resides in an area of memory used by Simon's Basic so you cannot use the two together. I doubt you will find a speech synthesizer that will work, with the possible exception of Commodore's own *Magic Voice*. However, that is a lot more expensive even if it were generally available. At £7.95 I don't think you will beat *Bigmouth*, compatible or not.

Dear Tommy. I have had a Vic-20 for over two years now and there is one topic which puzzles me. What exactly are 'turtle graphics'?

'Turtle Graphics' is the name commonly given to the graphics drawn by using LOGO type commands. LOGO is a language which uses a small graphic 'turtle' to draw lines on the screen by giving commands such as FORWARD 10 RIGHT 90 FORWARD 10 which will draw a right angle. Similar commands can be made into a sequence to draw almost any shape, including circles. In reality, the 'turtle' is just a symbol on the screen to show you the current position of the pen. If you haven't already done so, read the review of LOGO and the Valiant Turtle in the March issue.

Dear Tommy. Please could you give me your views on disassemblers and monitor programs for the

Commodore 64? I wish to buy a disassembler monitor utility but have no idea how good any of them are. I have a price limit of £50 but would be prepared to go over that for excellence. I assume you mean an assembler, disassembler and a monitor program, these being three distinct features. An assembler allows you to write a machine-code program using mnemonics (eg LDA x) instead of using Hex or decimal values, plus many other useful facilities such as labels which save you having to manually calculate jumps etc. The assembler then converts the program into true machine-code.

A disassembler does exactly the reverse, turning the decimal values into readable mnemonics and operands (the latter being the numbers that follow the mnemonics). A monitor normally allows you to write, edit and run your m/c program in much the same way as the Basic editor, plus allowing you to display register values and memory addresses.

Since there are always risks of crashing irreparably when developing machine-code you would be better going for a cartridge based program such as Audio-Genic's Monitor (£29.95) or Mikro from Supersoft (£59.80) since you will not have to go through the bother of reloading the monitor each time, just your own program.

Having said that, however, Commodore's own machine code development system (£24.95) is very good, even though it is disk based, especially when used in conjunction with their 'Assembler Tutor' program (£29.95).

There is also the Dr Watson 'Beginner's Assembly Language' which at £12.95 for the tape and book is ideal for the novice. Lastly, Zeus-64 from Design Design is a reputedly excellent little assembler/monitor at only £9.95.

For more detailed comments on some of the programs mentioned, look at the review in the January issue called 'Going into Assembly'.

WARNING

It is illegal to sell pirated copies of computer games. The only software that can be sold legitimately through our classified section are genuine tapes, disks, or cartridges bought from shops or by mail order from software houses. *Commodore User* will press for the maximum penalties to be brought against anyone breaking these rules. We regret that due to large-scale swapping of pirated software we can no longer allow swaps of tapes, disks, or cartridges in our classified section.

061-445 4375 061-445 4375
Commodore C16
Cassette Hire

Library constantly updated as new games become available. Membership fee of £6.50 includes **12 FREE** rentals? One price for any game. Charge of **£1.25 inc. p&p BOTH WAYS** For complete membership kit, post cheque or postal order to:

**39 Guildford Road
Levenshulme M19 3FG.**

Wanted Disk based complex and
White and Red Community does not want
compatible more PC - Phone
Hackerday 99% after 49% Day
or listed 16073 working 100%
lat 1 day in between 81

Vic-20 8K expander with 2
expansion slots. Price \$249.
Production Co. Basing, Pa. 19006
484-1111. **VideoMate 400** by All-in-one
acellent company. Call toll free
800-337-7774 for more details.

Vic-20 and Vic-20 with 800K
 100% IBM PC/MATC compatibility and
 extremely stunning laser graphics.
 3.5" floppy disk or only \$19.95!
 Call 1-800-225-1212 ext. 335

Tripler 64 cartridge Overlook by
nutritionalists and printers. Total
inhalation chamber room air
control for ventilation systems.
Offer M-Engineering Ltd 10 St.
Evelyn.

GBM 64 reset switch - set back of all register problems without losing memory contents. £9.99 plus postage. Gasey, 32 Topham Drive, Lymington, Hampshire SO40 8PW.

Software for sale, all systems go
 For more info, call 800-368-0000.
 Just a little too.

Easyscript and Future (France) have jointly developed the 3000- and 4000-series 286 IBM PCs. The 3000-series 286 PCs are based on the 386 architecture, while the 4000-series 286 PCs are based on the 486 architecture. The 3000-series 286 PCs are available in 16- and 32-MHz versions, while the 4000-series 286 PCs are available in 16- and 32-MHz versions. The 3000-series 286 PCs are available in 16- and 32-MHz versions, while the 4000-series 286 PCs are available in 16- and 32-MHz versions.

Hulk, Dictator, Gridrunner,
 award-winning author of
 the *Gridrunner* series. Will be on
 the 07/02/98/22 after 10:00.

Commodore 64 100% IBM compatible
 Speed up to 10 MHz, only 12" and 16" color
 Coded by Windows for easy compatibility

AT LAST!
A CHEAP RS232 INTERFACE
FOR THE COMMODORE-64
COMPLETE WITH CABLE &
MANUAL. JUST **£24.95.**
CENTRONICS CABLE FOR
THE 64 **£14.50.** PRICES
INCLUDE VAT AND P&P
RING **FIFO COMPUTERS**
ON 01-590 0833

CBM 64 user wanted as pen-pal for exchange ideas and programs, all letters answered, also wanted details of System 15000 (help!!). Write to: Ian Cunningham HQRA, 3 Arnd Div, BFPO 106 (by letter disk or tape!).

Vic 20 24K 3 slot motherboard, forth, Vicfile database, programmers aid cartridge, books (Vic Revealed, Programmers Reference Guide, Assembler Tutorial). Will sell individually. Phone Ruislip 32649 or write to L. Graham, 6 Glenfield Crescent, Ruislip, Middlesex HA4 7PF.

CBM 64 user requires second hand printer. Also Gemini business software on tapes wanted — either swap with games or reasonable price. Ring 01-427 8158 evenings.

Wanted: printer and paper, compatible with Vic 20, disc drive, joystick or 16K expansion for Vic 20 also required. Phone Uppingham 823497, or write Stonecroft, Lyddington, Rutland LE15 9LF.

64 Software cheap! Flight Path 737, The Pyramid, Revelations, Cosmic Cruiser, Rtty Radio, program the lot for £6.00. ICL green screen monitor composite video not bad \$10.00. Tel. 051 423 5493, Saturdays only! or mailbox BM4 Compunet.

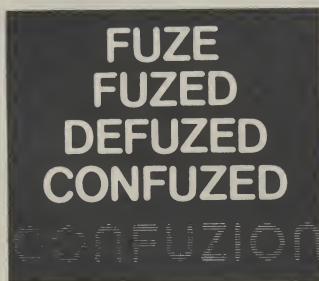
Commodore Printer MPS 1256 costs £354 but will sell for the price of an MPS 301 only £199 ono. Ring Ian 595 8822.

CBM 64 C2N cassette, for sale, fully boxed, instructions included, joystick reference guide, assembler course, three games, quick sale required. Bargain £195. Tel. 021-358 7452 Birmingham after 5pm — John.

Vic-20 C2N 16K switchable Ram Pack, Introduction to Basic 1, 15 top games, Perils of Willy, Jet Pac etc., all the leads, plus Quickshot II, Joystick. As good as new. Phone Cav 610325. £160 ono.

Software writer would like to hear from anyone able to write music on the 64, especially anyone who could re-arrange rock and pop tunes. Please write to Stephen Howard, 53 Valley View Road, Rochester, Kent or phone 0634 812833.

Infocom EPYX/CBS Datasoft Atarisoft, Access, English software, Melbourne House, US-Gold, Synsoft/Synapse, Ocean, Activision, Alligata, Software Projects, Honey Fold, Highlight Software sale. Ring Niki at 01-748 1809 5-10 p.m.



Irish readers. Swap Pirate's Cove and Mutant Herd cartridges for any other two cartridges or 16K Vic-20 cassette game. Write to Albert Plattner, Springfield, Tramore, County Waterford, Ireland.

C64 Easy Script — £30. Future Finance — £30. All brand new, boxed, all on disk. Also six games — \$5. Phone 021-777 6756 — Belfield, 11 Knutswood Close, Kings Heath, Birmingham B13 0EN.

AD INDEX

Arrow	82
Audiogenic	61
Beau Jolly	28
Beyond Software	44
British Telecom	52
Calco	56, 67
Cheeta	47
Chromasonic	27
Citoh	IFC
Collins Soft	17
Database Publications	10, 11
Deals for Readers	69, 70, 71
E.A.S.	60
Electronic Aids	61
Evesham	6, 7
Handic	58, 59
Interface	23
Jothan	56
MCT	60
MPS	56
Microchallenge	5
Micro de bug	39
Micro Press	39
Mirrorsoft	9
Movemead	56
Mushroom	40
Ocean	50, 51, OBC
RK Software	60
Sixty 4 Software	82
Sophisticated Games	60
Tandata	24
Touchmaster	33
Trigsoft	39
UK Soft	67
Ultimate	18
US Gold	IBC, 4, 74, 75
Whitby Computers	55

CLASSIFIED ORDER FORM

Lineage —
15p per word to
private individuals —
20 words min — 40 words
maximum.
30p per word to Trade.
20 words min — 40 words
maximum.
Semi-display — £7.50 for S.C.C.
Ring 01-251 6222.
All classified and semi-display
advertising is pre-payable.

Warning
It is illegal to sell pirated copies
of computer games. The only
software that can be sold
legitimately through our
classified section are genuine
tapes, disks, or cartridges
bought from shops or by mail
order from software houses.
Commodore User will press for
the maximum penalties to be
brought against anyone
breaking these rules. We regret
that due to large-scale
swapping of pirated software
we can no longer allow swaps
of tapes, disks, or cartridges in
our classified section.

1	2	3
4	5	6
7	8	9
10	11	12
13	14	15
16	17	18
19	20	21
22	23	24
25	26	27
28	29	30
31	32	33
34	35	36
37	38	39
40		

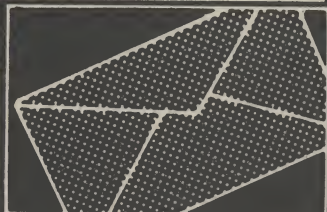
All classified ads are subject to space availability

PLEASE PRINT IN BLOCK CAPITALS
I enclose cheque/P.O. for £..... made payable to *Commodore User*.
Name.....
Address.....
Total number of words.....
Post to: **AD. DEPT. COMMODORE USER, 30-32 FARRINGTON LANE, EC1R 3AU.**



LETTERS

This is your page: normally we write for you, but here we listen. Feel free to let us know what you think — about the magazine, about Commodore, about suppliers, about life, art, the meaning of existence or whatever. We don't print everything we receive, of course; but anything that might be of specific relevance or general interest will make it to these pages.



Pic a winner

I have just received the Activision Designer's Pencil program which you were giving as prizes to your competition.

I would like to thank you and Activision for this excellent product. I find it very easy to use and I can record my pictures onto my video recorder as titles for my home movies. It makes my films much more interesting.

Once again, thank you very much for my prize and keep up the good work in producing a fab magazine.

Brian Le Lion,
Thornbury,
63 Stopford Road,
St Helier,
Jersey.

Group for plotters

I am trying to start a user group for the Commodore 1520 printer/plotter with the aim of exchanging programs, hints/tips etc. I would be grateful if you could mention this on the Letters page of your magazine.

Anyone interested should contact me at the address below (s.a.e.) or on: Prestel Mailbox: 782279612; Compunet Courier: SCB 1.

If anyone has any programs they can send them to me on a disk or cassette and after I have collected a number of programs it will be returned to them with the new programs recorded on it.

Steven Birks,
86 Birches Head Road,
Birches Head,
Stoke-on-Trent ST1 6LJ.

Sparkling results

On reading the problem on 'sparkle' with sprites on the 64 in the March issue, I found a solution to overcome it. When

you run a sprite program, 'sparkle' will automatically appear on the screen; press Run Stop but *not* Restore and type Run again. The 'sparkle' should disappear.

If you have to break into a program with sprites in it, try not to use Run Stop and Restore, just use the Run Stop key, as then you will have to go about using the method above again.

Also, my friends in school are always complaining about saving sprites as when they load them back in, a funny shaped sprite appears. This can be overcome if you do not run the program before you save it or type in this line:

POKE 53269, 0 : SAVE "PROGRAM NAME"

and you will get perfect saves.
Bryn Refail,
Gwyddelwern,
Corwen,
Clwyd.

Sweet sixteen

I bought a Commodore 16 for my 13-year-old daughter, who has outgrown her Sinclair ZX81, and I have also purchased a Commodore Plus/4 for myself. We both enjoy programming in the games from the C16 Games Book, by Melbourne House, although the ZAPP game will not work on the C16 as it runs out of memory. The CHEX-SUM routine, used in the book, has proved very useful to us as 'first-time' users, and other publishing houses would do well to follow their lead.

I found *Commodore User* to be the best magazine I have read and was pleased to see that the program listings were easily readable, unlike other magazines who, to save space, have reduced the image size so much that the listings appear to be just a lot of dots on the page.

One question before I close: do you know if any of the software houses plan to bring out any games software or books specifically for the

Plus/4?

Mrs Cherie Sell,
31 Milton Avenue,
Margate,
Kent CT9 1TS.

● Since the 16 and the Plus/4 are compatible, software houses will obviously prefer to work on the 16, thereby killing two birds with one program. Whether the Plus/4 will spawn software in its own right remains to be seen. It looks doubtful, though, with the 128 all set to appear in the summer.

Cut-price blues

I have recently purchased a Commodore Plus/4 computer, on 10th January 1985, and I'm absolutely sick to find the same computer some five or six weeks later at half price. Is Commodore UK going to give people like myself credit notes for £150 which are redeemable as part payment for other Commodore products?

I have now been caught paying twice the value for a computer, in future I shall be extra careful that I don't get caught again.

D. T. Giddings,
99 Lesney Park,
Erith,
Kent.

A radio ham writes

May I congratulate you on your new 'Micro-Wave radio' series published in your March issue. As a keen short-wave listener I found the article most interesting. I await the forthcoming articles with interest. I myself own a Commodore Vic 20 +16K and a 1541 disk drive. At the moment I am considering buying a Commodore 64. I also own a ZX81 +16K which I use for decoding morse code signals received via my communications receiver.

I am 20 years of age and a keen short wave listener, though I do intend in the near future to sit the radio amateur

exam and hopefully obtain an amateur radio licence. My interests are in the use of computers in amateur radio, particularly the Vic-20 and Commodore 64 in the following fields: log checking, propagation prediction, decoding cw, radio teletype decoding, receiving of sstv via a computer and the tracking of satellites as well as the decoding of their transmissions using a computer.

I would like to hear from any readers who are interested in these fields and are already using their Vic-20 or Commodore 64 computers in any of the fields I have mentioned. I would like them to get in touch with me with a view to exchanging information on programs, program listings, circuit diagrams for interfaces, as well as items of sw and amateur band news.

Steven Smith,
The Signpost,
High Road,
Whaplode,
nr Spalding,
South Lincs.

Micronet Talkback

I'd just like to say thanks for the Happy Hacker page in your excellent mag. Can you put more info on Compunet, as I find it very expensive in connect time to use, but would like to know if they are speeding it up. Thanks again.

Alan Hampton,
15 Avenue Gardens,
Margate,
Kent.

● This message was posted on Micronet's Talkback page. HH reckons that Compunet's new and faster software came into operation last month — it doesn't seem to have made much difference.

Send your letters to
Commodore User,
Priory Court,
30-32 Farringdon Lane,
London EC1R 3AU.

COMMODORE

User

Free games to type in by: Jeff Minter, Tony Crowther, Mike Singleton, Dave Collier, Richard Leinfellner, Tony Gibson and Mark Harrison, and Jon Williams.

FREE GAMES
FROM THE TOP NAMES

This bumper games supplement is COMPLETELY FREE WITH Commodore User — the UK's favourite Commodore magazine.

To make sure of getting your Book of Games from the Top Names cut out this coupon and take it to your newsagent.
Dear newsagent, please order me a copy of the June issue of Commodore User — and every month after that as well. (Delete if not appropriate.)
Signed.....
Address.....

On sale
26th May

Just 95p

THE 64 SOFTWARE CENTRE

1 PRINCETON STREET, LONDON WC1R 4RL.
Telephone: 01-430 0954

The specialist centre with the largest stock of software for the Commodore 64 (domestic and imported).

**BUSINESS • HOUSEHOLD •
EDUCATION • UTILITIES •
GAMES**

Open 10 a.m. to 6 p.m. (including Saturdays). Demonstration facilities — support given with business programs. Mail order. (Access, Visa, Eurocard, Mastercard).

Very good people to deal with.

ADVERTISERS!

Rent this space
for **£50** or less
per month

Contact: **Julie Madigan or
Julia West
01-251 622**

Vic-20 Word Processor. Victext.

Powerful word processor. Facilities include:- Large text buffer, auto centre text, variable tab, insert, amend, delete, copy, move text, word count, right justify, etc. Fully menu driven with comprehensive easy-to-use instructions. Needs +16K expansion min. Great value: cassette £6.95, disk £9.45.

Vic-20 Data File. Takes the place of any card index.

Facilities include:- save, loadfile, full sort, print all/part records, amend, delete records, memory remaining, etc. Needs +8K expansion min. Cassette £4.50. Both programs can be used with all direct connect Vic printers inc 1520 printer/plotter. Fast delivery by first class mail. Send cheque/PO to: A&C Software, 75 Oakthorpe Gardens, Tivdale, W. Midlands B69 2LF.

4040 wanted will pay postage plus insurance. Must have manual and be in good condition. Up to £380.00 with interface, £410.00 without. Ring 01-464 6017 and ask for Mr Anderson.

Vic-20 penpal wanted. I would like to swap tips, information, pokes, etc. Write to me using a program on tape or normal paper at 28 Milton Road, Hoylan, near Barnsley S74 8BD. My name is Stephen Gennard.

Adventure Helpline. The Quest Line — a free service for adventurers. Most popular adventure games covered. Free membership card. Send s.a.e. or phone Colin Loosemore, 29 Rufus Gardens, Totton (0703) 871960 or Tony Treadwell, 41 Fernmill Road, Oxford (08675) 6670.

NEW

— Commodore 64 —

TURBO-BREAKER

AT LAST, Transfer Turbo games to Disk
Blank screen, Flashing and picture
screen turbos by most software houses
Easy to use.....£10.95

***** **TURBO-SAVER** *****

Make easy Turbo back up copies of
your slow load games, no user knowledge
needed, easy to use.....£8.00

***** **TRANSFER - MK2** *****

Transfer most slow load games to Disk
Simple to use, and needs no user
knowledge, or skill.....£8.00

***** **DISK - TURBO** *****

Make your disk games load faster,
45secs instead of 2mins, does no harm
to your drive.....£8.00

***** **DISKOPY** *****

A Selective disk copier, fast and very
easy to use.....£7.00

***** **DISK - DOCTOR** *****

A Disk editor, alter any part of the
disk, recover a scratched file £8.00

ARROW MICRO SERVICES

**20 Portmeadow Walk
London SE2**

PD100

COMMODORE 64 OWNERS

MIDLAND COMPUTER LIBRARY

The First & Largest Commodore Library in the World
(often copied but never equalled)

- 1 All the latest titles on cassette, disk and cartridge
 - 2 Hire your first game absolutely free
 - 3 Life membership £6
 - 4 Hire charge from only £1.25 inc p&p for full 7 days
 - 5 No limit to the amount of games you can hire
 - 6 All games originals with full documentation
 - 7 Games, Business and Educational software
 - 8 Return of post service
 - 9 Lowest new hard and software prices in the UK
 - 10 Join now on 14 day money back guarantee
 - 11 Over 1,000 games in stock inc. many US imports
- Send cheque/PO for £6 with your first selection, or large SAE, for further details, stating machine to:

MIDLAND COMPUTER LIBRARY

31 Evenlode Close, Lodge Park, Redditch B98 7NA
Telephone 0527 23584 Dept. CU

CBM64 4-slot switchable motherboard — £30. Trippler Centronics interface with 2 metres of cable for Commodore 64 or Vic-20. Works well with Epson and compatible printers — £40. Phone Banbury (0295) 54946 evenings and ask for Graham Chapman.

Advice available to Vic and 64 users concerning add-ons. Audio adapter for cassette loading helps locate programs on long tapes, including reset switch for 64. Keeps Basic program in memory when crashed. Looped etc. Wigan 225029 for details.

C16 software. Now available, the game you'll love to hate — 'Pontoon' £4.99 inc. p&p. Send cheque/P.O. to Venturegate Ltd, 17 Harold Road, Leeds 6 1PR (please allow 28 days for delivery).

Vic-20 16K Rampack. C2N cassette unit, programmer's reference guide, joystick and top games: Skramble, Jetpac, Zargon's Kingdom etc. 1½ years old, good condition — £100 o.n.o. Tel: Pontypool 2008, 6pm (not Monday). Write: 93 Usk Road, Pontypool, Gwent, South Wales NP4 8AF — I. S. Carmack.

CBM64 modem for sale. Four months old, genuine reason for sale — £75 o.n.o. Phone 0903 45902 ask for Ian.

CBM64 disk software for sale. Oxford Pascal, Easy Script, programmer's utilities (CBM). Also Simon's Basic cartridge and Seikosha GP100VC printer (same as 1525) — all excellent condition. Offers to David Swift, 40 Romsey Road, Winchester, Hants.

Experience the thrill of Formula One Motor Racing



P O L E

®

64

P O S I T I O N



This genuine reproduction of one of the worlds most popular arcade classics gives you the chance to experience the thrill of Formula One motor racing! Enter the practice sessions. Race against the clock to qualify. Ditch with other drivers for the lead. Only your skill and endurance see you to the chequered flag first!



CASSETTE £9.95 DISK £14.95



Premier Arcades™ from DataSoft®

Hi ... Rat Fans

Roland's Rat Race



Yeh, it's me, your favourite Superstar, in my first-supa-game! I'll need all your help to find my furry friends in the nasty Rodent World where all kinds of monster meanies live. Hurry now, and I'll see you on your screen, from your cuddly, adorable me, Roland Rat, Superstar.

NEW

SPECTRUM 48k

6.90

ocean

COMMODORE 64

7.90

Ocean House · 6 Central Street · Manchester · M2 5NS · Telephone 061 832 6633 · Telex 669977

Ocean Software is available from selected branches of: **WOOLWORTH** · **WHSMITH** · **John Menzies** · **LASKYS** · **Rumbelows** · **COMET**
Spectrum Shops and all good software dealers. Trade enquiries welcome.

*it's
brill!*